The RUBBER AGE

Published TWICE-A-MONTH at New York

Vol. 21 APRIL 25, 1927 No. 2

R. T. VANDERBILT CO.

INCORPORATED

50 East 42nd Street, New York

Use More Reclaimed Rubber

It's possible with

AGE-RITE, CAPTAX and THERMATOMIC CARBON

Age-Rite as a Plasticizer and Life Insurance.
Captax for Quality, especially through low temperature cures.
Thermatomic Carbon adds tensile strength.

WAREHOUSES:

AKRON
Union Terminal Warehouse
East South & Brooks Sts.

BOSTON
Francis Fitz Company
30 Pittsburgh St.

CHICAGO
Midland Warehouse & Transfer Co.
43rd & Robey Sts.

SAN FRANCISCO
Haslett Warehouse Co.
60 California St.

TORONTO
17 River St.
Toronto Storage Co.

TRENTON
Anchor Warehouse Co.
N. Y. & Olden Ave.

REPRESENTATION OF GOODS AND SERVICES SHOULD BE TRUTHFULLY MADE AND SCRUPULOUSLY FULFILLED.*

R&H
REG. U.S. PAT. OFF.
CHEMICALS AND SERVICE

*{No. 8. A series based on the conception of the U. S. Chamber of Commerce "Principles of Business Conduct". Reprinted in the interest of keeping American business on a sound and wholesome basis.}

THAT the enthusiasm engendered by good products sometimes expresses itself in exaggerated statements is understandable—but through this there may come a flareback—a loss of confidence.

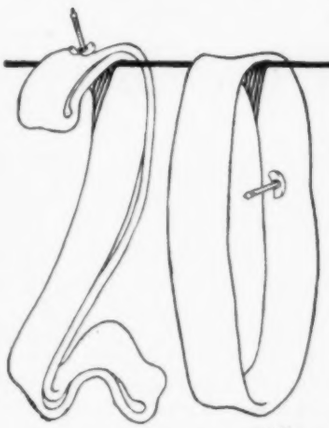
R & H is proud of the quality of its chemicals and of the very real service it offers to customers. Exaggeration, even if only implied, is not tolerated. To exceed customers' expectations is our aim. We may not receive flowery words, but new customers and increased business with firms of long standing on our books, is reward and proof sufficient of the consumer's view of our policy. Quality chemicals, well serviced, is the bargain we make—and keep.

The ROESSLER & HASSLACHER CHEMICAL CO.
709 Sixth Avenue, New York City

Better Inner Tubes at no higher cost

VULCANOL

A Semi-Ultra Accelerator



Exceptionally good tear resistance

Long range of cure

Complete freedom from scorching

Minutes' Cure
at
Pounds Steam Pressure

VULCANOL imparts a high tear resistance and a long range of cure to compounds that contain it in a degree unapproached by any other accelerator. Vulcanol tube stocks that cure in 20 minutes at 20 pounds steam pressure can be mixed and calendered under normal factory conditions with complete freedom from scorching.

Send for a copy of technical bulletin "Short Cures at Low Temperatures".

E. I. DU PONT DE NEMOURS & CO., Inc.
Dyestuffs Department, Sales Division
WILMINGTON, DELAWARE
8 Thomas Street, New York, N. Y.

Fine Rubber DU PONT **Chemicals**

BOWSER

No more trips to the graveyard!

Gears require real lubrication; those that aren't adequately lubricated go quickly to the graveyard; occasional daubing with grease won't do.

Gears that are *thoroughly* lubricated last almost indefinitely.

And, today Bowser can offer a system for lubricating gears *thoroughly;* a system built around our Fig. 801 Lubricator-Pump, as illustrated.

With every stroke of the plunger in this pump, a predetermined amount of lubricant (grease or heavy oil) is forced into a bearing or on the gears. "Infallible lubrication"—that's exactly what this new Bowser system offers. The system is simplicity itself.

No forgetting, no waste, and no dry gears or bearings—that's the Bowser guarantee for this newly-perfected system.

For completely illustrated folders and bulletins, address Dept. 76

S. F. BOWSER & COMPANY, Inc.
LUBRICATION ENGINEERS AND MANUFACTURERS
FORT WAYNE, INDIANA, U.S.A.

LUBRICATORS—OIL FILTERS—OILING SYSTEMS—ACCESSORIES
OIL STORAGE AND DISTRIBUTION SYSTEMS

The
RUBBER AGE

Published Twice-a-Month by

The PALMERTON PUBLISHING CO., Inc.
Fisk Building, 250 West 57th. St., N. Y. City

P. L. PALMERTON, *Editor* — PETER P. PINTO, *Business Manager*

Vol. 21 — April 25, 1927 — No. 2

Table of Contents

NEWS SECTION

Tire Dealers' Stocks Are Heavy 59
Industry Hesitates Over Price Increase 59
Rubber Chemists Meet at Richmond 60
Rubber Consumption High in March 60
British Levy Import Duty on Tires 61
Survey Shows More Reclaimed Used 61
Goodyear Job Went Begging 62
Anode Announcement Cuts Share Prices ...62
Tire Production Jumps In February 64
May Raise More Sea Island Cotton 65
Rim Output High in March 66
Smallest Airplane Tire Announced 66
Tread Design Cannot Serve as Trade Mark..69
Intercontinental Profit was $764,000 71
Rubber Share Prices Expected to Advance..71
Adamson Introduces New Mill 73

FEATURES and DEPARTMENTS

Editorial Comment 75
Electrodeposition of Rubber 76
Commercial Aspects of Electrodeposition...79
Puncture Sealing Compounds 81
Rubber Reclaiming 83
London Letter 85

MARKETS and STATISTICS

Crude, Reclaimed and Scrap Rubber 86
Chemicals and Compounding Ingredients ..88
Tire Fabrics and Cotton 90
Statistics 93, 94, 95, 96

ADVERTISING INDEX 101
MARKET PLACE LISTINGS 97, 98, 99, 100

Entered as Second Class Matter, June 10, 1920, at the Post Office at Highland, N. Y., under Act of March 3, 1879.

Contents Copyrighted 1927 by The Palmerton Publishing Co., Inc.

Within the past few weeks an additional number of rubber manufacturers have adopted CATALPO for use in their compounds.

Why this swing to

CATALPO

THE UNIVERSAL RUBBER PIGMENT

There must be a number of outstanding reasons why so many rubber manufacturers are now using CATALPO in treads, tubes, carcass frictions, insulated wire and many other products. Such a universal adoption of this material is not chance—it is the result of rigid tests made by each manufacturer in his own laboratory under conditions which his chemists prescribe and control!

Here are a few of those reasons:

Catalpo combines both high quality and low cost;
Catalpo has a low specific gravity;
Catalpo has a very fine particle size and runs absolutely uniform;
Catalpo is gritless on any test;
Catalpo replaces other pigments on a volume basis and produces a stock with good tear test and high tensile strength.

CATALPO is replacing Blanc Fixe, Zinc Oxide, and other pigments of higher and lower cost, which have been in long use for Inner Tubes.

We shall be pleased to show you how CATALPO can be used to improve the quality of your compounds. It will pay you to send for the full facts.

MOORE & MUNGER

33 Rector Street **New York City**

THE NAUGATUCK CHEMICAL COMPANY
NEW YORK
Materials
for the
Rubber Goods
Manufacturer

VGB

ANTI-OXIDANT — AGE IMPROVER

The life sustaining qualities imparted to rubber goods by VGB are well known.

In addition to this use of VGB there is another application that may be of considerable value — certainly it is an additional proof of the good effect this material has on vulcanized rubber products.

We refer to the ability of VGB to restore life to deteriorated rubber.

Rubber thread and surgeons gloves, which had deteriorated extensively, were dipped for fifteen minutes in a ten per cent solution of VGB in benzol and after two weeks were found much improved in strength and elongation. Heavier goods would have to be dipped for a longer time.

VGB is a good age improver—easy to handle and fairly priced.

THE NAUGATUCK CHEMICAL CO.
1790 BROADWAY
NEW YORK CITY, N. Y.

APR 25'27
©CLB 740083

The
RUBBER AGE
The Only Twice-a-Month Rubber Publication

Vol. 21 | NEW YORK, APRIL 25, 1927 | No. 2

TIRE DEALERS' STOCKS HEAVY, SURVEY SHOWS

Average Retail Stock Consisted of 68.8 Casings and 114.7 Inner Tubes on April 1, According to Preliminary Report on Government Survey—Balloons Popular.

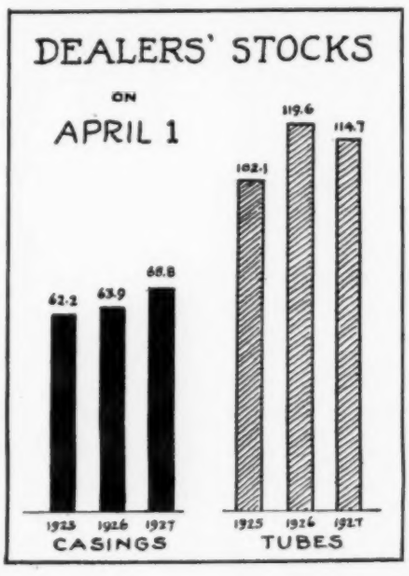
Stocks of tires in the hands of dealers throughout the United States on April 1 were unusually heavy, according to the preliminary report on a survey which the Rubber Division of the Department of Commerce has been making. The total number of automobile casings held by the average dealer on April 1 is shown to be 68.8, whereas the same agency reported for the same date in 1926 that the average dealer was holding only 63.9 casings. At the same time in 1925 the average stock consisted of 62.2 casings. On the commonly accepted basis of 100,000 tire dealers in the country, these averages would mean that retail tire stocks this spring contain about a half million more casings than in 1926.

Tire manufacturers are not surprised that dealers' stocks are somewhat higher since spring shipments to the dealers have been unusually heavy, and although the weather has been favorable, it has not been good enough to cause the motoring public to take off the dealers' shelves all the extra stock that they have accepted. The increase in the size of the retail stocks is not regarded as excessive and is not likely to affect production schedules.

The preliminary report of the Rubber Division is based on the first 25,867 replies received from dealers. Questionnaires were sent to more than 100,000. However, it has been found that the average of the first few thousand replies is a reliable index to what the final results will be. An analysis of the replies shows that the percentage of small dealers stocking less than ten tires has decreased somewhat, and this factor may have something to do with the larger stock showing for the entire group.

Of the casings held by dealers, almost one-half are now of the balloon type. A year ago only 34.3 per cent were balloons.

Completed questionnaires are still being received by the Department of Commerce and a final report will be prepared during the last week in April and will be reported in the next issue of THE RUBBER AGE. The details of the preliminary compilation are as follows:



AVERAGE STOCK PER DEALER ON APRIL 1ST

	1927	1926	1926
Total Casings (including balloons)	68.8	63.9	62.2
Balloon casings (alone)	33.8	21.9	14.8
Inner tubes	114.7	119.6	102.1
Solid and Cushion tires	24.4	26.9	20.1

VULTEX PROCESS TO BE USED IN UNITED STATES

Vultex, Ltd., a British concern holding patents covering the vulcanization of rubber in its liquid state, has announced the completion of arrangements whereby the United States Rubber Co. of New York will cooperate in the use of its patented processes. The agreement is understood to leave the British company free to develop its interests independently in the United States. The process was invented by Dr. Philip Schidrowitz and is particularly applicable to sheet rubber goods. It is expected that through close cooperation of the two companies on technical problems great possibilities for the process can be worked out.

INDUSTRY HESITATES OVER PRICE INCREASE

Tire Manufacturers Feel Need of Better Prices for their Goods But Each Takes Waiting Attitude—Opposition May Develop—Effect on Stock Discounted.

Although three weeks of April have slipped away without the expected increase having been made in tire prices, the feeling continues strong that such an advance will be announced by the manufacturers within the next fortnight. It is generally recognized that tire prices are too low to permit the companies to make a reasonable profit on their heavy sales this spring, but each company hesitates to be the first to announce a higher price list. This attitude differs sharply from that of 1926 when tire prices were being reduced and leadership in the movement was not lacking.

One Akron manufacturer is reported as doubting the necessity of a price cut, and a letter to his dealers along that line is expected. Such a move by the right company would undoubtedly have the effect of postponing the price increase altogether. The increase looked for is from 10 to 12 per cent.

Dispatches from Detroit indicate that automobile companies expect the increase to be made. Whether or not it would affect original equipment business at once is doubtful. Any upward price trend must eventually include the automobile companies but since competition in both the tire and motor industries is so keen, it is likely that the tire manufacturers would hesitate to enforce an increase on their original equipment accounts as early as on their replacement business.

The latest rumors of tire price increases have failed to affect the Stock Exchange quotations on the stocks of tire companies. At the end of March and the first of April such shares firmed considerably on the expectation of better earnings through increased prices, and such a possibility has been fully discounted in the present prices of the stocks.

Increased sales in the first three months of the year have been reported by all the leading tire manufacturers.

200 RUBBER CHEMISTS GATHER AT RICHMOND

Large Number Attend Semi-Annual Meeting of Rubber Division at Richmond—Interesting Discussion on all Papers—Dinner and Smoker Held at Hotel.

What was characterized as a very successful meeting of the rubber industry's leading chemists was concluded on Thursday, April 14, after a two-day session held in conjunction with the semi-annual meeting of the American Chemical Society at Richmond, Va. Close to 200 members and guests of the Rubber Division were on hand and listened to the various papers which were delivered on Wednesday afternoon and at the two sessions on the following day. The papers proved of great interest as was shown by the more than usual discussion that took place.

The headquarters of the A.C.S were maintained at the Jefferson Hotel, but the Rubber Division held its meetings in a large room in the First Presbyterian Annex. In addition to the presentation of the various papers (see April 25 issue of THE RUBBER AGE for complete abstracts) the Physical Testing Committee and the Committee on Research Testing submitted reports. It was agreed to continue the latter committee and to receive from it another report at the next meeting in Detroit.

Plan for Local Meetings

At the instigation of chairman Dinsmore and Dr. Wiegand, an interesting discussion was held on the possibilities of arranging for the formation of local sections of the Rubber Division in leading rubber centers so that proper discussion might be had on each paper. At the same time suggestions of all papers delivered at the A.C.S. meetings be changed so as to make use of the facilities of the rubber trade papers to greater advantage. Chairman Dinsmore spoke at length on this subject and Dr. H. E. Howe of *Industrial and Engineering Chemistry* offered to co-operate with any plan which the Rubber Division Executive Committee agreed upon.

The smoker and dinner of the division was held on Thursday evening in the Winter Garden of the Hotel Richmond. Dr. Wiegand acted as toastmaster and introduced Messrs. Dinsmore, Whitcomb, Boggs, and Somerville. Mr. Boggs spoke at length on his recent trip to England and gave an interesting account of the workings of the Institution of the Rubber Industry. Dr. Somerville recounted the interesting way in which the International Exposition was conducted in Paris and compared the completeness and luxuriousness of that exposition with the poorly managed ones sometimes held in this country.

A burlesque entertainment, in which Messrs. Kelly, Curtis, Somerville, Boggs, Whitcomb and Winkelmann took part, wound up the evening's affairs.

W. W. EVANS

As announced in the last issue of The Rubber Age, Mr. Evans has joined the Technical Staff of the R. T. Vanderbilt Co. following his Resignation from the B. F. Goodrich Co.

INSPECTION TOUR MADE BY GOODRICH HEADS

Several of the directing heads of the B. F. Goodrich Rubber Company recently made a tour of the southeast, inspecting the interests of the company in Georgia. In the party were B. G. Work, president, W. O. Rutherford, vice-president, C. F. Van Cleef, secretary and L. D. Brown, treasurer.

The Goodrich officials visited the Atlanta branch and also inspected the Martha mill at Thomasville, Ga., which is owned by the Goodrich company and which is producing tire fabrics.

CLOSE PEERLESS PLANT IN NORTH BERGEN, N. J.

The Peerless Rubber Company, a subsidiary of the U. S. Rubber Company, shut down on April 1 after thirty years of operation in the township of North Bergen, New Jersey. The Peerless Company, until a few years ago, had been an independent manufacturer of rubber goods, producing large quantities of hose, tubing and belting. Over 600 people were employed in the factory, but at the time of closing there were only 35 employees, most of whom being maintenance men and watchmen.

Six years ago, after U. S. Rubber assumed control of the plant, production was cut more than half and only an experimental department was kept in operation. George Dyas, manager of this department, is quoted as saying that he had no intimation that work at the plant would be resumed in the future. Most of the products turned out by the Peerless Company are now made for the U. S. Rubber Company at Passaic, N. J.

RUBBER CONSUMPTION 36,141 TONS IN MARCH

Tonnage Used Last Month Sets Record Since 1923—Consumption Not Far Ahead of First Quarter of Last Year—Stocks Continue to Show Increase.

More rubber was used in the United States in Morch than in any month since May, 1923. According to the report of the Rubber Association, raised to a 100% basis, 36,141 long tons of rubber were consumed in this country last month. This consumption has ben exceeded in recent years only by March, 1923, and May, 1923, when the total tonnage used reached 36,629 and 36,155 respectively.

During the first three months of this year rubber consumption has amounted to 97,796 long tons, as compared with 96,268 long tons in the corresponding period of 1926. This is a gain of only 1,428 tons in three months, and if the 1926 consumption is going to approximate that of 1925 when 388,000 tons were used, heavy production in the tire factories will have to continue indefinitely. In the current month production has been curtailed somewhat as compared with March.

The rubber stock situation in the United States showed little change during March. Stocks on hand and afloat at end of the month were 135,340 tons; at the end of February 133,352 tons were on hand and afloat. The tonnage on hand in the United States decreased in March from 91,186 to 85,740; the stocks afloat to U. S. ports increased from 42,166 to 49,600.

On the basis of imports through New York and Boston, the Department of Commerce has estimated that total imports in March were 35,172 long tons. This figure checked closely with the estimate of Rubber Association which is based on the number of cases of rubber imported through all porst. The Association's estimate was 35,078 tons, of which 33,114 tons were plantations.

The stock or rubber in London appears to have almost reached its peak, or at least the steady advance has been checked. Increases and decreases have alternated in recent weeks. On April 16 the London stock stood at 65,033 tons.

FORD 1926 PROFITS REACH $75,270,895

The Ford Motor Company recently filed with the Massachusetts Commissioner of Corporation its balance sheet as of December 31, 1926. This showed total assets of $784,208,080 with surplus standing at $697,637,788, representing a gain of $75,270,895.

Property holdings of the company were increased in 1926 by $11,000,000. On December 31 this account stood at $143,293,982 as against $132,107,208 at the close of the previous year. Machinery and equipment was also proportionately increased while inventories showed a decline from $107,631,138 to $88,074,988.

BRITAIN LEVIES HEAVY IMPORT DUTY ON TIRES

Unbalanced Budget Prompts Action Denied To British Tire Manufacturers in Past—Rate Will be 33 1/3%, With Preference For Tires Produced in the Empire.

An unbalanced budget has caused the British Chancellor of the Exchequer, corresponding to the Secretary of the Treasury in this country, to approve the imposition of an import duty of 33⅓ per cent on automobile tires brought into Great Britain. The British tire industry has appealed repeatedly in the past for such a tax in order to protect the home market, but always unsuccessfully. Faced with the necessity of raising more revenue in the next year to offset the deficit incurred last year, the British Government has taken the desired step, somewhat to the surprise and certainly to the delight of the British tire manufacturers.

American tire exporters will be the hardest hit. During 1926 their shipment to Great Britain amounted to 155,000 casings. The French Michelin company and American tire manufacturers have for years been sending thousands of tires into the British market where it is claimed they have been a factor in keeping tire prices at an unprofitably low point. Having suspected that an import duty would eventually be imposed, Michelin has recently completed a British factory and the new duty will operate in his favor. The B. F. Goodrich Company has had a branch factory operating in England for some time and will also be in a preferred position. Similar action by other American companies has at times been rumored.

Tires manufactured within the British Empire will receive a rebate of one-third of the duty. American rubber manufacturers having factories in Canada will naturally serve their British customers from those factories in the future.

Winston Churchill, Chancellor of the Exchequer, expects the tire tax to raise new revenue amounting to about £750,000, or about $3,700,000. The new tax is put into effect by extending the so-called McKenna duties to include tires as well as automobiles and parts. The latter have paid the tax for some time.

DOVAN GRANTS TWO NEW ACCELERATOR LICENSES

The Dovan Chemical Co., Church St., New York, has announced that E. I. duPont de Nemours and Co., and the American Cyanamid Co. have recently been granted licenses to manufacture, sell and use disubstituted guanadines as rubber accelerators under U. S. Patent 1,411,231 and Canadian Patents Nos. 227,316 and 247,133 which are held by Dovan. The Roessler & Hasslacher Chemical Co. had previously been licensed under the same patents. The Dovan company has notified the rubber industry generally that disubstituted guanidines purchased from these three companies may be freely used under the patents mentioned.

RESIGNS AS GOODYEAR ADVERTISING MANAGER

Lucian L. King

Lucian L. King, advertising manager of the Goodyear Tire & Rubber Company for the past fifteen years, has announced his resignation from the Goodyear organization effective May 1. He has been with the Goodyear advertising department since 1911 and was named manager shortly after becoming identified with that company.

Mr. King has been a director of the Audit Bureau of Circulation for many years and has represented Goodyear in the Association of National Advertisers and other organizations. His experience also covers radio as he was manager of the Goodyear station "WEAR" at Cleveland during its existence.

While his plans are not yet complete, Mr. King has announced that he will take up the selling of outdoor advertising.

Resigns from Ajax Rubber

W. R. Flournoy, assistant sales manager of the Ajax Rubber Co., has resigned his position to take charge of sales work for the Morse & Rogers Co., shoe manufacturers of New York city. He became identified with Ajax sales work at the close of the war and since that time has successively held the positions of sales promotion manager, assistant to the vice-president in charge of sales and assistant sales manager.

Firestone in Arizona

Harvey S. Firestone, president of the Firestone Tire & Rubber Co., Akron, who has been spending part of the winter in the south, has left for Arizona where he will visit his youngest son who is convalescing at Tucson.

SURVEY SHOWS GROWTH IN USE OF RECLAIMED

Preliminary Report of Department of Commerce Reveals Considerable Increase in Both Production and Consumption Last Year—Complete Report to Follow Soon.

With 121 firms, including 7 reclaimers, yet to be heard from, the reclaimed rubber survey of the Department of Commerce shows a 1926 production of 166,812 long tons of reclaims, and a consumption in the United States of 149,089 long tons.

These figures were officially released on April 20 as a preliminary report and are based on replies from 261 firms, including 8 reclaimers, 34 manufacturers who also reclaim and 219 other manufacturers. A final and more detailed report will be issued in two or three weeks.

The Department's survey in 1926 covered the reclaimers only and a consumption figure was deduced from the data furnished by them, the condition of their stocks at the beginning and end of 1925 being taken into consideration. By this method a consumption of 138,000 tons in 1925 were arrived at. The consumption in 1926 is known to have increased sharply. Estimates have run as high as 180,000 tons; 175,000 has been a commonly accepted figure although it is higher than the Rubber Association's incomplete statistics have indicated. With 7 reclaimers and 144 manufacturers yet to be heard from, it would appear that 175,000 long tons may prove to be a reasonable figure for the 1926 consumption.

The Department's questionnaire also contained a question about the use of factory scrap which was locally reground and incorporated in compounds. The replies indicate that 92 companies used 13,086 long tons of such reground scrap in 1926. Details of the preliminary report follow:

RECLAIMED RUBBER IN U. S., 1926

Firms Reporting		Long Tons
42	Production of reclaimed rubber	166,811.8
248	Consumption of reclaimed rubber	149,088.7
92	Factory scrap reground and used by rubber manufacturers	13,086.2
	Stocks of reclaimed rubber:	
232	December 31, 1925	12,938.5
241	December 31, 1926	22,716.1
	Reclaimed rubber exported:	
	Official Customs statistics	5,390.9

In addition to the replies used in the above compilation, the Department of Commerce heard from 174 other companies who neither produced nor used reclaimed rubber in 1926, 26 more were out of business and 4 had no record of the amount of reclaimed they had used.

Receiver to Sell Plant

An order for the sale of the plant of the International Rubber Company of America, Anderson, Ind., by Charles E. Smith, receiver, has been issued by Judge Carl Morrow of the Circuit Court. Judgment in favor of the bondholders for $265,317 and in favor of the Citizens Bank, Anderson, for $55,021.76 has been rendered by Judge Morrow.

GOODYEAR JOB WENT BEGGING, SAYS SWAINE

Gerard Swope of General Electric and Herbert Howell of Commerce National Bank Decline $250,000 Salary—Seiberling Urged Dillon to Hurry.

A number of unusual, if not surprising developments have occurred in the past two weeks in the $15,000,000 lawsuit brought by a group of stockholders of the Goodyear Tire & Rubber Co., against Clarence Dillon, John Sherwin and Dillon, Read & Co.

It developed on March 31 in testimony given by Robert T. Swaine, a member of the law firm of Cravath, Henderson & De Gersdorff, and a special counsel for the Goodyear company in 1921, that Frank A. Seiberling who was president of the Goodyear Tire & Rubber Co. during its financial troubles in 1920-21, repeatedly urged Clarence Dillon to hurry his plan for the firm's reorganization lest a creditor file a bill of bankruptcy and wreck the corporation. Robert T. Swaine pictured, in his testimony, Mr. Dillon and his investment house as being cautious before making any definite agreement to underwrite a $30,000,000 issue for first mortgage bonds.

Gerard Swope Refuses Office

Subsequently it transpired in testimony given on April 4 by Mr. Swaine that a salary of $250,000 and a percentage of the profits of the Goodyear company was offered to Gerard Swope, then president of the International General Electric Co., and now president of the General Electric Co. Mr. Swope, it appears, declined to head the Goodyear company and efforts were made to induce other outstanding men to accept the post, including Herbert P. Howell who was at that time a vice-president of the National Bank of Commerce. These efforts were finally rewarded in the appointment of E. G. Wilmer, now president of Dodge Brothers, as president of the Goodyear company.

According to George A. May, a senior partner of Price, Waterhouse & Co., public accountants, the losses of the Goodyear Tire & Rubber Co., during the 1920-'21 period of depression wiped out substantially all of the profits of the company for the preceding five years and came within less than a million dollars of the combined total losses of Goodyear's four largest competitors.

In testimony given on April 12, B. R. Anness of the Guaranty Trust Co., who was called as a witness for Dillon, Read & Co., said that the Goodyear company had applied to the Guaranty Trust Co., for a temporary loan of $10,000,000 with an idea of permanent financing later. He said that a number of officers of the Guaranty Trust together with representatives of the National City Co., went to Akron to learn if the current asset position of the company was such that a loan of $10,000,000 would tide them over for 30 days until permanent financing could be arranged. When auditors approached Frank A. Seiberling to explain an item in the statement showing his personal indebtedness totaling $3,500,000, the witness stated, Seiberling told them it was confidential and very few employees knew about it. According to testimony given by Mr. Anness a study of the company's position revealed such an unsatisfactory situation that the Guaranty Trust Co., and the National City Co., refused to finance the Goodyear company.

The taking of testimony is still proceeding in New York.

C. A. JONES

Mr. Jones' appointment as General Manager of the recently-organized Seiberling Rubber Co. of Canada, Ltd., was announced in the last issue of The Rubber Age.

CAR REGISTRATION UP 10.3 PER CENT IN 1926

After compiling figures furnished by the highway departments of all the states, the Bureau of Public Roads, Department of Agriculture, Washington, has announced that a total of 22,001,393 motor vehicles were registered in the United States in 1926. This was an increase of 10.3% or slightly more than 2,000,000 cars as compared with 1925. These figures differ but slightly from those which the B. F. Goodrich Company published several weeks ago.

Tire Prices at Low Point

According to some comparisons developed by the Miller Rubber Company, Akron, a motorist purchasing a tire at present prices gets 27 times as much for his dollar as he did in 1914. At that time a 32 x 4 casing sold for $56.65 and gave a mileage of about 3,500 miles. Today the same size tire can be bought for $18 with an average mileage of 20,000 miles. In addition the present dollar is worth about 67 cents as compared with its purchasing power thirteen years ago.

ANODE ANNOUNCEMENT CUTS SHARE PRICES

Anode Rubber Company, Ltd., Newly Formed in London, Claims New Process Will Result in Economy in Rubber—Is Affiliated With Anode Co. in U. S. A.

Part of the recent disturbance in the movement of rubber plantation company shares on the London market was due, according to a correspondent of THE RUBBER AGE, to an announcement regarding the new Anode process in which the Dunlop Rubber Co., Ltd., is largely interested. It is claimed for the process that less rubber will be used in rubber goods and that a longer life will be secured. The principal rubber shares weakened appreciably when details of the process were issued.

The process relates to the manufacture of automobile tires, inner tubes, and other rubber goods. Patent rights for the entire world (excluding the United States and France) have been acquired by the Anode Rubber Company, Ltd., which was formed to develop it. The essential feature of the process is the deposition of rubber direct from latex by means of electricity. In other words, the rubber is used in its natural liquid state as latex. A large amount of plant, power and labor is dispensed with, the natural nerve of the rubber is preserved and superior quality and economy in the use of rubber is insured.

Value of Process Proven

The process has already advanced beyond the experimental stage. It is the invention of Dr. Paul Klein of the Hungarian Rubber Goods Factory. Dr. Klein is the managing director of the new company organized in London. Its chairman is Sir Eric Geddes, who is also chairman of the Dunlop Rubber Co., Ltd. Its vice-chairmen are Julius Klein, vice-chairman of the Hungarian Rubber Goods Factory, and Hugo Marcus, vice-chairman of the Weiner Bank Verein, and chairman of the Hungarian Rubber Goods Factory.

The other directors are Sir George Beharrell, managing director of the Dunlop Rubber Co.; Alexis Duveaux, director Compagnie Generale d'Electricite, Paris; Baron Wilhelm V. Ofenheim, president of Galician Oil Co. (Galicia) Ltd.; Julius Priester, director Hungarian Rubber Goods Factory; F. Alexander Szarvasy, chairman of British Foreign & Colonial Corporation, Ltd., and director of Dunlop Rubber Co.; and Alfred Schwarz, director Wiener Bank Verein.

In France a separate company, owned by the stockholders of the new company, has been created. In America the patent rights are held by a separate company, in which the new company has a substantial interest along with the Eastman Kodak Co., and the Goodrich Co.

J. L. Schnitzer has severed his connection with the International Rubber Co., and is now chief chemist of the Federal Portland Cement Co., Inc., Buffalo.

PARA-FLUX

(Reg. U. S. Patent Office)
(U. S. Pat. No 1,611,436)

The Universal Softener

ADAPTABLE

For Tires, Mechanicals, Frictions, Hard Rubber, Reclaims.

UNIFORM

Manufactured to Rigid Laboratory Standards.

IMPROVES

Wear, Tensile, Ageing, Softness, Tack.

ECONOMY

High Quality—Maximum Softening, Moderate Price.

Details on Request

THE C. P. HALL CO.

116 Central Savings & Trust Bldg.
AKRON, OHIO

Manufacturers Agents

SULPHUR
CLAY
MICA
WHITING

FACTICE
STEARIC ACID
CARBILINE
MAGNESIA

CONTINENTAL NOW IN GENERAL MOTORS BUILDING

The Continental Rubber Company of New York and its affiliated companies, leading factors in the production and sale of guayule, has removed from 120 Broadway, New York City, to its new offices in the General Motors Building, Broadway and 57th Street. Although the 22-story structure is not yet entirely completed, Continental has been at its new location since April 18. All of the floors are expected to be ready for tenants early in May.

The General Motors Building, the latest and one of the finest structures to be built in the automotive and rubber district on Columbus Circle, is just on the other side of Broadway from the United States Rubber Company and Goodrich buildings. The Fisk Building, which houses many important rubber companies, the Rubber Association of America, and THE RUBBER AGE offices, is just across 57th Street from the new structure.

Rental agents for the building state that many companies interested in the rubber industry have leased space although the only formal announcement made so far, in addition to Continental, concerns the Kelly-Springfield Tire Company which will leave the Fisk Building to occupy more than one complete floor in the General Motors Building. The General Motors Corporation will occupy the twelve upper stories of the building.

THE GENERAL MOTORS BUILDING
This new building, just opened, dominates the Columbus Circle district in New York City

FEBRUARY SEES JUMP IN TIRE PRODUCTION

February Total 5,095, 970 Which is Gain of 2 1/2 Per Cent Over January—Tire and Tube Sales Show Slight Reduction—Balloon Demand Continues Strong.

Statistics compiled by the Rubber Association of America covering the operations of the tire and tube industry in February reveal a slight upward trend in production during the month, but a slight decrease in shipments. On a 100% basis, production of pneumatic casings totaled 5,095,970 over 4,965,186 in January, representing a gain of 2½ per cent. Shipments, however, on the same basis decreased from 4,932,162 in January to 4,458,761 in February, while inventories were proportionately increased in the latter month to 11,075,089.

A similar situation was true of inner tubes of all types. February production amounted to 5,658,977 as against January production of 5,336,754. January shipments totaled 6,016,364 while February shipments were reduced to 5,120,325. Inventories in February stood at 16,075,665. In 1926 production during February stood at 6,821,548, with shipments somewhat less, and larger inventories.

Balloon casings and tubes continue to soar upward both in production and sales. Shipments of casings in February totaled 2,515,966 as against 2,393,834 in January, while production in February stood at 2,690,281 as against 2,391,704 in January. Tubes also jumped from a January production of 2,454,621 to 3,002,178 in February. Compared with last year, when production stood at 2,402,229, the 1927 report shows a gain of 599,949.

In the case of high pressure cord casings and tubes there is a general reduction all along the line. Shipments and production have decreased with proportionate increases in inventory. Figures for January and February, taken from the Rubber Association's report, and raised to 100%, are as follows:

	JAN. 1927	FEB. 1927
PNEUMATIC CASINGS—		
Inventory	10,732,060	11,075,089
Production	4,965,186	5,095,970
Shipments	4,932,162	4,458,761
INNER TUBES—		
Inventory	15,585,161	16,075,665
Production	5,336,754	5,658,977
Shipments	6,016,364	5,120,325

BRITISH DUNLOP RAISES DIVIDEND RATE TO 20%

The dividend announcement of the Dunlop Rubber Company, Ltd., Fort Dunlop, England, has just been made. Apparently the company found 1926 a very satisfactory year, notwithstanding the unusual difficulties of the period, especially the general strike and the coal strike, for the dividend on the Ordinary shares is raised from 15 to 20 per cent. The amount placed to reserve, however—namely, £500,000 ($2,500,000)— while quite substantial, is considerably less than was transferred last year, the sum then allocated being £1,294,768 ($6,473,840). The increased dividend will absorb about £340,000 ($1,570,000) more than was distributed a year ago, so that it would appear that the profits (which, no doubt, have very conservatively arrived at) are about £450,000 ($2,250,000) less than those disclosed a year ago. The sum carried forward is £665,000 ($3,325,000), against £593,000 ($2,915,000).

Firestone Dividends

Regular dividends on common and preferred stock have been declared by the Firestone Tire & Rubber Company of Akron, Ohio. A dividend of $1.50 per share on the common stock was paid April 20 to stockholders of record at the close of business April 10th.

The regular quarterly dividend of 1½% on the 6% preferred stock of the company was paid April 15 to stockholders of record at the close of business April 1 and the quarterly dividend of 1¾% on the 7% preferred stock has been declared payable May 15 to stockholders of record May 1.

Infringement Suit Filed

Suit for alleged infringement of patents in the manufacture of cushion tires was begun April 16 in Federal district court at New York by the O. & W. Company and the Overman Cushion Tire and Rubber Co., Inc., against the Goodyear Tire & Rubber Co. The plaintiffs ask for an injunction refraining the defendant from manufacturing tires claimed to infringe on patents obtained by Max Cyrus Overman in 1913 and 1914. The complaint also contains a demand for an accounting and damages.

Goodrich Annual Meeting

The annual meeting of the stockholders of the B. F. Goodrich Company was held at the Company's office, 1780 Broadway, New York, on April 20. In addition to electing six directors for a three-year term, the stockholders voted a retirement of 11,880 shares of preferred stock of $100 par value which had been acquired by the company. This reduces the number of preferred shares to 400,960. No-par common stock amounts to 750,000 shares.

Increases Capital Stock

The Marion Insulated Wire and Rubber Company of Marion, O., has increased its capital stock from $750,000 to $1,250,000. The increase of $500,000 is held in preferred stock.

W. A. Boesche Appointed

The board of directors of the Star Rubber Company of Akron, Ohio, has appointed William A. Boesche, who for many years was a member of the board, vice-president of the company.

The directors also appointed H. B. Hankinson a member of the Board. Mr. Hankinson was formerly general sales manager of the company. Star Rubber Company officers are: M. E. Mason, president; W. A. Boesche, vice-president; J. W. Dessecker, secretary, and R. G. Shirk, treasurer.

MAY RAISE OUTPUT OF SEA ISLAND COTTON

Relatively High Prices of Long Staple Grades Make Feasible Increased Output of Sea Island Cotton, which is Ideally Suited for Tire Fabrics.

Relatively high prices of long staple cotton when compared with other grades has aroused much interest in the possibilities of restoring the Sea Island cotton industry in those sections of the southeastern States where it was formerly grown. Such a development is of concern to rubber companies, inasmuch as this grade is ideally suited for tire fabrics. The record crop of short staple cotton during the past season has led farmers to believe that the boll weevil is no longer a menace to the crop, and that the production of Sea Island cotton can be resumed on the same mixed-variety system of planting used in former years.

An adequate supply of pure seed is the first essential in reviving the Sea Island cotton industry, according to specialists in the Department of Agriculture. Pure seed cannot be produced unless a district is limited to one variety to prevent mixing and crossing.

Studies of the fruiting habits of Sea Island cotton have shown that it affords less opportunity than upland cotton for the breeding of boll weevils early in the season, but full advantage of this difference could not be obtained unless Sea Island was grown in isolated districts where it could be kept from crossing with upland or other cotton.

Any efforts to resume the production of Sea Island cotton in the southeastern States would need to be organized for the exclusive production of one variety and continued for several years in order to determine the advantages of isolated planting and improved cultural methods to develop adequate stocks of pure seeds and to establish market relations for a high quality, standardized product.

PHILIPPINE RUBBER IS FINDING READY MARKET

In order to help the small rubber growers in the Philippines and to show them that there is a waiting market for their product, the Meyer-Muzzall Company of Manila is purchasing Philippine rubber in any amount, however small, and is sending it to the United States. Announcement of this fact was recently made in Manila by A. H. Muzzall, a member of the firm. He was originally the rubber expert of the crude rubber survey party which visited the Philippines for the Department of Commerce.

The rubber which the Meyer-Muzzall Company has so far bought has been shipped to the Firestone Tire and Rubber Company at Akron. Current quotations have been paid for it and Meyer-Muzzall say that they are not attempting to make any profit on handling it. The amount available is too small in any case. When production has increased, it is planned to establish a separate buying agency with branches in the appropriate districts.

It appears that there is a reasonable basis for believing that production will show an increase in the future although no big planting movement is underway. The government has supplied seeds and seedlings to a large number of farmers who are making satisfactory progress with them. The practise is being continued and the aggregate acreage will in time become important.

AKRON MAY WIN LITCHFIELD AIR TROPHY

THE LITCHFIELD TROPHY
This handsome trophy has already been won twice by W. T. Van Orman who has represented Akron.

IF EITHER of the three Akron balloons entered in the National Elimination Balloon race on May 29 should be the winner, the handsome trophy presented by P. W. Litchfield, president of the Goodyear Tire and Rubber Company, would find a permanent resting place in the city from which it started its travels several years ago. The trophy is awarded each year to the chapter of the National Aeronautic Association of the United States which the pilot of the winning balloon represents. The Akron chapter has had the trophy for two years and needs only a victory this year to come into permanent possession of it.

The three Akron entries will all be piloted by experienced airmen. The Goodyear balloon will be in charge of W. T. Van Orman who won both the national and the international races last year. His aide will be Walter Morton who was with him last year. The other Akron entries are by newspapers of that city. Akron-built balloons will be flown for them by airmen who have been active in aeronautics at Goodyear.

The race will be for distance, and in addition to the Litchfield trophy, five cash prizes will be awarded. The three balloons flying the greatest distances will also have the honor of representing the United States in the international race for 1927.

The Akron race is scheduled to start from the Akron-Cleveland speedway at 5 o'clock on the afternoon of May 29. It will be the most important air event ever held in Ohio. The number of entrants is limited to twelve, and minimum of six is required before the race is sanctioned officially.

Officers of the Akron National Balloon Race Association, Inc., which was formed to manage the race this year, are: C. W. Seiberling, president; W. C. Young, vice-president; H. W. Maxson, secretary and race manager; and W. F. Jones, treasurer.

Stedman Declares Dividend

The board of directors of the Stedman Products Company of South Braintree, Mass., has declared the 34th consecutive quarterly dividend of $1.75 per share on the preferred stock of the company. The dividend was paid April 1 to stockholders of record at the close of business March 25.

Monarch Expands Factory

Beginning with the first of April the Monarch Rubber Company of Hartville, near Canton, Ohio, started on an expansion program, it is reported, which will increase the present output of approximately 500 casings a day to 750.

Two new factory units have been completed and installed with new equipment. The new units will have a floor space of 85x160 feet and 20x60 feet and will be used for storage and mill purposes. According to officials of the company, payrolls will also be increased in proportion to new business.

GOODYEAR-DILLON SUIT OPENS IN AKRON MAY 9

Following deposition hearings in New York in the $15,000,000 lawsuit brought by F. C. Tomlinson and other stockholders of the Goodyear Tire & Rubber Co., against Dillon, Read & Co., it has been announced that the actual trial will take place May 9 in Akron.

The trial invilves not only the accounting and damages asked by F. C. Tomlinson and other stockholders, but also removal of Clarence Dillon and John Sherwin as management stock trustees. Setting of the early date for final trial of the case on its merits means that no hearing will be held on the motion filed March 3, which sought immediate removal of Clarence Dillon as management stock trustee and the appointment of a local man in his place. It is expected that the Tomlinson suit will consume four or five weeks.

GOODRICH ANNOUNCES SMALLEST AIRPLANE TIRE

THE B. F. GOODRICH CO., Akron, has recently developed an 18 x 3 airplane tire for straight-side rims. It will be used on lightplanes. In the accompanying photograph this smallest tire in the aeronautical line is shown resting on the largest airplane tire, a 64 x 14. The latter is used on heavy bombing type planes. Some few weeks ago the Goodrich company announced a 20 x 4 lightplane tire and sizes between the largest and smallest have gradually been taken care of until the company is now in a position to meet every need. Production of airplanes in the United States in 1927 is expected to be around 1,500, as compared with about 1,000 in 1926.

CRUDE RUBBER SURVEY FUTILE, SAYS O'NEIL

The world-wide crude rubber survey of the Department of Commerce, which came to an end last month with the publication of the last of a long series of reports, was entirely futile and a waste of money, in the opinion of Wm. O'Neil, president of the General Tire and Rubber Company, Akron. In a letter which he has addressed to the company's distributors, Mr. O'Neil says:

"After reviewing the report of the investigators who investigated the crude rubber situation for the Department of Commerce, one is impressed that nothing has been discovered that American rubber manufacturers could not and did not tell the Department of Commerce before the investigation began. We urged the saveing of the half million dollars involved and the two years that have been required for the making of the government's report".

Mr. O'Neil's view is that the world will have to depend for an indefinite period for its rubber supply on the region from which it is now coming and that a cooperative spirit toward the British and Dutch will prove to be more profitable than a competitive one. He also believes there is every likelihood of another rubber shortage.

Dexter Receivers Appointed

Edward R. Dexter and E. Bright have been appointed equity receivers, under $20,000 bond, for the Dexter Rubber Manufacturing Co., Inc., rubber tire accessories manufacturers, Goshen, N. Y. The liabilities are estimated to be $200,000 and the assets, consisting of plant and machinery, merchandise accounts and notes receivable, are valued at $300,000. The Dexter corporation was organized in 1912 and took over a long established business.

Rubber Proofers Busy

The production of rubber-proofed fabrics is proceeding at a higher rate this year than in 1926. In March the proofers reporting to the Rubber Association of America reported that they treated a total of 2,084,000 yards as compared to 1,459,000 yards in March, 1926. March production this year included 718,000 yards of auto fabrics and 881,000 yards of clothing fabrics. Both of these classes showed a gain over 1926.

Auburn Rubber Speeding Up

The Auburn Rubber Co. of Auburn, Ind., has put on a double calendar crew and, according to A. L. Murray, president, is gradually increasing its force.

The company is manufacturing tires with colored side-walls which are intended to harmonize with the color of the car of which they are a part.

Drake Joins Corduroy

R. R. Drake, former manager of the tire service department of the United States Rubber Company, has joined the Corduroy Tire Company, Grand Rapids, Mich., as special field representative.

2,071,989 RIMS WERE INSPECTED IN MARCH

Large Increase Noted Over Those Tested Last Month.—Highest Number Passed Since September.—Balloons Reach 85.1 Per Cent of Total Output.

March witnessed the greatest number of rims inspected and approved by the Tire and Rim Association of America, Inc., since September of last year. Rims tested in February amounted to 1,753,224 while those in March were 2,071,989, a jump of 318,765.

Balloon rims reached a new high level of production for March when they rose to 85% of the total of all rims inspected. Truck rims reached 8.5% while high pressure rims made a percentage of only 2.5. Clincher rims dropped from 17.1% in March a year ago, to 3% in March, 1927.

The full March report of the association follows.

Size	March 1927 Number	%	March 1926 Number	%
24x3	3,833	0.2	7,613	0.3
26x3	5,553	0.3	13,308	0.5
28x3	—	—	417	0.0
Clinchers				
30x3-24	—	—	507	0.0
30x3½-23	59,281	2.9	415,880	16.8
31x4 -23	2,663	0.1	8,497	0.3
Balloons				
26x4 -18	98,151	4.7	—	—
27x4½-18	6,535	0.3	—	—
28x5 -18	—	—	—	—
26x3½-19	66,617	3.2	—	—
27x4 -19	23,227	1.1	—	—
28x4½-19	45,853	2.2	—	—
29x5 -19	559	0.0	—	—
27x3½-20	23,357	1.1	—	—
28x4 -20	285,396	13.8	267,292	10.8
29x4½-20	42,590	2.1	71,818	2.9
30x5 -20	22,778	1.1	30,506	1.2
28x3½-21	648,568	31.3	921,659	37.3
29x4 -21	316,012	15.3	322,247	13.2
30x4½-21	157,382	7.6	178,028	7.2
31x5 -21	16,635	0.8	35,913	1.5
33x6 -21	6,159	0.3	15,699	0.6
30x4 -22	1,260	0.1	—	—
31x4½-22	1,518	0.1	2,606	0.1
High Pressure SS				
30x3½-23	13,045	0.6	13,197	0.5
31x4 -23	—	—	—	—
32x4½-23	21,275	1.1	36,821	1.5
32x4 -24	14,473	0.7	13,879	0.6
35x4½-24	—	—	496	0.0
32x3½-25	2,196	0.1	—	—
33x4 -25	508	0.0	2,466	0.1
34x4½-25	521	0.0	2,628	0.1
Truck				
30x5 -20	153,905	7.4	69,328	2.9
32x6 -20	17,167	0.8	20,513	0.9
34x7 -20	3,879	0.2	3,836	0.1
36x8 -20	1,290	0.1	1,567	0.1
40x10 -20	303	0.0	80	0.0
36x7 -22	442	0.0	—	—
34x5 -24	3,141	0.1	2,831	0.1
36x6 -24	3,822	0.2	7,642	0.3
38x7 -24	749	0.0	3,019	0.1
40x8 -24	1,346	0.1	1,016	0.0
44x10 -24	—	—	91	0.0
TOTALS	2,071,939		2,471,400	
Recapitulation:				
Motorcycle		0.5		0.8
Clincher		3.0		17.1
Balloon		85.1		74.8
High Pressure		2.5		2.8
20" Truck		8.5		4.0
24" Truck		0.4		0.5

CATALPO!

Foresight that Insures

Godfrey L. Cabot's forty years of natural gas experience developed a foresight which insures gas supplies to fulfill customers' requirements.

CARBON BLACK
GODFREY L. CABOT, INC.
940 Old South Building, Boston

CATALPO!

Tailor Your Inner Tubes to Fit

With Balloon Tires you should make tubes to conform to their large cross sections and small diameters, and not *stretch* them to fit.

Circular Mandrels supply this necessity and produce a round tube without wrinkles and without any change in your present equipment or manufacturing methods.

Round tubes will not pinch and will wear longer.

We will be pleased to send you full information on the use of Circular Mandrels.

THE CLYDE E. LOWE CO.

2976 East 81st Street Cleveland, Ohio

CURVED VULCANIZING CALENDER SHELLS MANDRELS

The First Practical

HORIZONTAL TYPE MOLD

(Patents Pending)

For Tires, Tubes and Air Bags

Write for Particulars

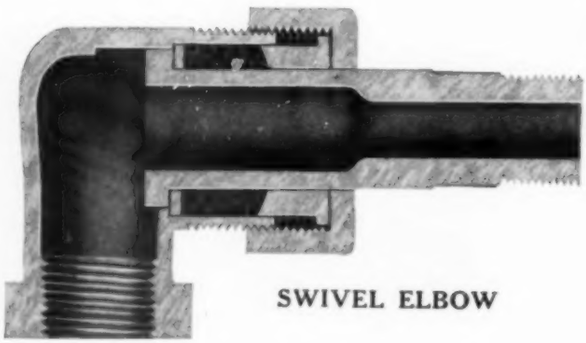
Top half operated by air or Spring Balance Control with additional Center Lock for larger sizes. - - Reducing the fin to minimum.

MOLDS — CORES — CHUCKS — POWER STANDS

De Mattia Brothers, Inc.

Tire Building Equipment Since 1909

Clifton New Jersey



SWIVEL ELBOW

"Bridgwater"

SWIVEL CONNECTIONS

EQUIP your presses with Bridgwater Swivel Connections and end your steam leaks and constant repacking costs.

A metallic packing is used in our joints and those packed over a year ago are still equipped with the original packing and will not need replacing for some time. *Bridgwater joints win by comparison.*

Try a set at our expense.

MOLDS **INDIA CORES** Special Machinery

(LICENSED BY INDIA MACHINE & RUBBER MOLD CO.)

Bridgwater Machine Company

AKRON OHIO

TREAD DESIGN CANNOT SERVE AS TRADE MARK

District Judge Upholds Commissioner of Patents in Refusal to allow Goodyear to Register All-Weather Design as Trade Mark—Foreign Protection Sought.

A suit of the Goodyear Tire and Rubber Company to compel the United States Commissioner of Patents to register the well-known diamond or "All-Weather" tire tread design as a trade mark has been decided unfavorably to the Akron company. Judge Soper, in the district court of Maryland, ruled that the Commissioner was right in refusing such registry since the tread design was a functional part of the product and therefore now allowable as a trade mark.

The suit which has just been decided dates back to 1921. In seeking the trade mark registration Goodyear described the mark as "a band of diamond shaped figures" and disassociated it entirely from the tread of their tire. Such disassociation was not accepted as reasonable by the Commissioner of Patents who held that it was really a design or part of their product which the company was seeking to register, and he refused the application. Goodyear then entered against the commissioner the bill of complaint which has just been dismissed.

The All-Weather tread design has already been twice registered in the United States as a design but not as a trade mark. The registry of design as well as the laws which forbid unfair competition assure Goodyear a monopoly of the tread in the United States. The complaint stipulates, however, that so long as the design is not registered as a trade mark in the United States, it cannot be protected by registration in many foreign countries to which the tires are exported. It was this protection against trade mark piracy abroad that Goodyear hoped to secure.

TAX ON TIRE FILLERS REFUNDED TO TEXAS CO.

The National Rubber Filler Company of Texas, manufacturers of sectional rubber fillers to be used in place of inner tubes, has won its suit against the Commissioner of Internal Revenue for the return of taxes paid under protest on its products from 1919 to 1923. The Commissioner held that the tire filler was taxable as an accessory and hence insisted that taxes be paid on it just as was necessary in those years in connection with new tires, tubes and accessories. The U. S. Court of Claims has ruled that the filler is not an accessory and as a result the government will refund almost $25,000 to the company.

The filler made by the National Rubber Filler Company is made of ground inner tubes which are purchased from scrap rubber dealers. The ground rubber is made into a plastic mass with cements and afterward vulcanized in three-inch sections. The product has been sold direct to motorists who wished to extract further mileage from casings which were so worn that the use of inner tubes was impracticable.

AKRON EQUIMMENT ENLARGES OFFICE AND SHOP SPACE

Factory and Office of the Akron Equipment Company

THE AKRON Equipment Co., Akron, Ohio, recently completed an addition to the front section of its office and shop building and now has available more manufacturing facilities as well as display and office space.

The addition is two stories high, 60x70 feet, and cost about $25,000. A new heating plant for the entire shop was also installed at the same time. The ground floor is used for office purposes, factory extension, and for handling shipping, while the upper story will be used for displaying the company's repair equipment marketed under the name "Tyrwelder."

The Akron Equipment Co., manufactures repair vulcanizers, molds and cores, tire building equipment, the Flynn Tube Vulcanizer and also does general machine work. C. R. Quine is president and general manager.

U. S. Rubber Meeting

The 35th annual meeting of the stockholders of the U. S. Rubber Company was held at New Brunswick, N. J., on April 19. Directors for the coming year were elected and various important business matters taken up.

New Dunlop Tread

The Dunlop Rubber Company, Ltd., of Birmingham, England, has adopted a new tread for its tires, and all straight-side tires are now available with it. The triple stud tread which proved popular on last year's tires is retained but the tread blocks are made deeper and larger, while each outside block is supported by a wedge-shaped buttress tapering from the tread down to the wall. It is claimed that the revised tread gives added strength, longer life and surer road grip.

New Pioneer Garden Hose

The Pioneer Rubber Mills of San Francisco are putting two new lines of garden hose on the market branded "Wearso" and "Rubro" respectively. These new products are identical in quality, according to the Pioneer Company, with their other brands called "Crackproof" and "Sunproof," except for different corrugations in the covers.

Harry Retzheimer

Harry Retzheimer, special assistant to the sales manager of the C. Kenyon Co. of Brooklyn, died on April 6.

PATENT INFRINGEMENT CHARGED BY GOODYEAR

The Goodyear Tire & Rubber Co., recently brought an action in the United States district court, northern district of Ohio, eastern division, sitting at Cleveland, against the Rubber Service Laboratories Co., Inc., of Akron, charging infringement of certain sulphur nitrogen accelerator patents held by the Goodyear company. The Goodyear action is directed against the Rubber Service accelerator "Z-88" which Goodyear maintains is an infringement. Answer to the charge has been filed in the Cleveland court by the Rubber Service Laboratories.

HI-GRADE RUBBER CO. ORGANIZED IN AKRON

The Hi-Grade Rubber Company has been granted a charter, with authorized capital of $25,000, and will start operations in a building that has been leased on E. Market St., near Britian Rd., Akron, Ohio. The company will manufacture dental and hospital rubber goods and druggists' sundries.

The corporation, which is a closed one, includes on its directorate L. L. Carpenter, L. C. Broecker, R. M. Harris, G. G. Lake, Dr. E. D. Vosper and W. H. Crawford.

Rubber Used in New Falcon

The new Falcon-Knight six-cylinder car introduced on March 22 by Falcon Motors, Inc., of Detroit, uses a Borg and Borg single plate clutch which has a special rubber fabric insert in the driving plate. This use of rubber is said to result in a smooth, vibrationless drive. The car uses 30 x 5 4-ply balloon tires.

SAYS CUSHION TIRES ARE BEST FOR TRUCKS

Cushion tires, as improved in recent years, are more satisfactory and economical on trucks and motorcoaches of moderate size and speed than either solid or pneumatic tires, according to statements made by A. L. Schoff, vice-president of the Overman Cushion Tire Company, in an address at the recent transportation and service meeting of the Society of Automotive Engineers in Boston. This is due to the design of the tires, which allows the rubber to be deformed easily, and to the greater height of tread rubber available for wear. Records taken from large fleets of trucks show that mileages of 50,000 to 60,000 are frequent and that the average for cushion tires is 30,000 miles, for solid tires 14,000 and for pneumatic tires 12,000 miles.

Impact tests made by the Bureau of Public Roads show that the cushioning effect of these tires is nearer that of pneumatic than of solid tires.

Cushion tires are regarded as suitable equipment on one and two-ton trucks operated at 15 to 30 miles an hour, on 3½-ton trucks for speeds of 12 to 20 miles, on five-ton trucks for speeds of 10 to 18 miles, on the front wheels of 7½-ton trucks for speeds of 8 to 15 miles, and on single and double deck motorcoaches for speeds of 15 to 25 miles an hour.

ACCELERATOR A-16 NOW OFFERED BY AKRON CO.

The Rubber Service Laboratories Co., Akron, has just announced a new accelerator, "A-16." Chemically this accelerator is an aldehyde reaction product of a Schiff's base, or similar to aldehyde accelerators A-17, A-11, A-19 and A-40 previously introduced by the company. Accelerator "A-16," as well as the others just mentioned, is manufactured under U. S. Patent No. 1467984 and other patents pending.

Physically A-16 is a thin brown liquid which mills readily into rubber. It may be master-batched, though this is not necessary, particularly with large mill or Banbury mixing.

The manufacturers say that A-16 is easily handled and does not cause scorching. It is classed as a normal temperature accelerator, though it is exceedingly active at all temperatures above 250° F., or 15 pounds steam. Under average conditions it is said that this material will give fine results in tires, inner tubes and mechanical goods. It is a high tensile accelerator and gives a very snappy cure, but without an unusually high modulus. It will replace the guanidines without basic changes in formulae or factory operations, and is claimed to give excellent aging results, thus obviating the need of anti-oxidants.

Tire Dealers Organize

Tire dealers in two Ohio cities have recently organized trade associations. In Dayton the Dayton Tire Dealers' Association has been launched, while in Cincinnati the dealers have banded together as the Cincinnati Retail Tire Dealers' Association. Oscar Kirschner is president of the Cincinnati organization and P. B. Best is head of the Dayton dealers.

fine Rubber Pigments

MANUFACTURED BY HUBER

aerfloted ARROW BLACK

THE STANDARD CARBON BLACK OF THE RUBBER INDUSTRY—

PRODUCED AT SWARTZ, LA., BRECKENRIDGE, TEXAS & LANCE CREEK, WYO.

aerfloted SUPREX CLAY

HIGH RE-ENFORCING POWER AT ORDINARY FILLER COST—

PRODUCED AT WARRENVILLE, S. C.

aerfloted C.P. DRY COLORS

SOFT, BRILLIANT COLORS FOR RUBBER PRODUCTS—

PRODUCED AT BROOKLYN, NEW YORK

J. M. HUBER, INC.

CARBON BLACKS — CLAYS — DRY COLORS

130 West 42nd St., New York City

Branches in Principal Cities

Consulting Rubber Technologist

PRACTICAL

Twenty years' experience with the largest and most successful companies in the country

Physical and Chemical Testing

Special facilities for abrasion and quick age tests

Expert Advice to Correct Factory Trouble

New Processes and Formulas Developed

R. R. OLIN LABORATORIES

852 Wall Street, Akron, Ohio.

CATALPO!

INTERCONTINENTAL NET PROFIT STANDS $764,122

Earnings Are Less Favorable in Last Half Of 1926 as Conditions in Mexico Become Difficult and Rubber Prices Decline—All Activities of Company Progressing.

The 1926 annual report of the Intercontinental Rubber Company and subsidiary companies, leading factors in the production and distribution of guayule rubber, shows a net profit of $764,122 after reorganization expenses, interest, depreciation, and Federal taxes. This was equal to $1.28 per share on the 596,004 shares of no par stock which will be outstanding when exchange of shares under the reorganization plan has been completed.

The operating profit during the year was $1,109,906 to which was added $79,949 in other income. This gives a total income of $1,189,855. Against this was charged the following items: Expenses, etc., $183,177; interest, $9,072; depreciation, $119,991; and Federal taxes, $113,493. The consolidation balance sheet of December 31, 1926, is shown in the next column.

President Carnahan's Statement

In his annual report to the stockholders, G. H. Carnahan, president of the Intercontinental Rubber Company, said in part:

"Guayule rubber as now produced sells at a discount of approximately 20% as compared to plantation rubber and prices followed the general downward trend of the rubber market in 1926. The available output of guayule rubber during the first six months was disposed of at relatively advantageous prices, but the last half was adversely affected by an unusually severe and protracted rainy season in Mexico, transitory difficulties with labor and a relatively unfavorable market.

"Operations on the Sumatra plantation continued without interference or interruption. At the end of the year 2,722 acres were being tapped on an alternate monthly basis. Two hundred and twenty-three acres of new rubber trees were planted during the year, bringing the total planted area up to 4,147 acres. A further 250 acres will be planted in 1927 on ground already prepared, and an additional 700 acres of older trees will be brought into the tapping round.

"The program of gradually expanding our cultivated guayule area in California has continued without change. Two hundred acres transplanted in February, 1926, have come through the first year with a good stand in excellent condition, a further 600 acres is now being transplanted, and in April the nurseries will be sown with seed to produce plants for 2,000 acres to be transplanted in February, 1928. In addition to the headquarters area near Salinas, Monterey County, central California, four demonstration tracts of five acres each were set out in norther California and three in southern California. Experimental areas are also being planted in South Carolina, Georgia and Mississippi, where results will remain doubtful for several years."

INTERCONTINENTAL RUBBER CO.
(And Subsidiary Cos.)
Balance Sheet, Dec. 31, 1926

ASSETS

	1926	1925
*Land, bldgs & eq	$4,104,920	$3,824,585
Cash	160,377	539,439
Call loans	2,350,000	.....
Mark secur	18,007	18,007
Accts & accept rec	193,010	364,787
Inventories	511,606	278,629
Advances & claims	105,340	69,265
Def chgs	104,490	173,001
Treasury stock	1,720	.....
Total	$7,549,470	$5,267,713

LIABILITIES

Capital stock	†$5,960,040	$3,137,000
Drafts & accts pay	127,509	153,678
Fed tax reserve	92,658	105,283
Div pay	.....	55,000
Accr interest	.....	9,072
Convert gold notes	.....	580,600
Def credit	.....	18,000
Sundry reserves	72,745	82,678
Res for prop values	299,727	299,727
Surplus	996,791	826,675
Total	$7,549,470	$5,267,713

** Includes patents, tradenames, etc., but is after depreciation and amortization.*

† Represented by 594,378 no par shares and 1,626 shares to be issued to complete exchange of shares under reorganization plan.

Late Stock Prices

	Last Price Apr. 19	Last Price Apr. 4	1927 High	1927 Low
Ajax	11⅝	11	12⅝	9
Firestone	126	125½	128	117
do 6% pfd.	105½	105½	104¼	101½
do 7% pfd.	100¾	100¾	100¾	98½
Fisk	18½	18	18¼	16
do 1st pfd.	86½	86¼	87⅜	81
General	148	—	150	145
do pfd.	105	—	105	99¼
Goodrich	57½	55	58¾	42¾
do pfd.	100⅛	100⅜	103½	95
Goodyear Com.	—	45⅝	45⅝	29½
do pr. pfd.	108½	107¾	108⅞	104½
do pfd.	—	111⅜	102½	98½
Hood	42	41	47	42½
India	—	27½	30	28
Intercontinental	13½	13	15¾	11½
Kelly Springfield	24¾	18¾	24¾	9½
do 1st pfd.	70	60	70	44
do 8% pfd.	—	67	67½	35
Lee	8½	7⅞	9	7
Miller	36	35½	36⅜	32
do pfd.	102	102⅝	104	100
Mohawk	—	15	25	15
do pfd.	41	40	65	65
Seiberling	22¾	22¾	24	21⅜
do pfd.	—	98½	100	96
Star	—	4	5	4
U. S. Rubber	63⅞	61¼	67⅛	57⅝
do pfd.	110⅞	110½	111¼	107¼
U. S. Rubber Reclaiming	12	—	12	12
do pfd.	—	—	87	87

RUBBER SHARE PRICES EXPECTED TO ADVANCE

London Observers Believe That Tightening of Restriction Will Cause Greater Activity in Planting Securities—Good Profits Have Been Reported in the Past.

Much greater activity in the rubber share market in London is expected within the next few weeks. For many weeks or even months, the holders of rubber shares have been patiently waiting for the results of the operation of restriction. In some quarters patience has become exhausted, and sales have taken place with the result that prices have tended downward. The pressure of restriction, with the practical certainty of a further tightening up of the process, is expected to be felt very soon. Shares have been a little more closely held since the price of rubber has shown a tendency to move upward.

Eric Miller, whose knowledge of the commercial side of rubber is unrivalled, has expressed the opinion that "producers can be assured of higher prices for the smaller crops exportable this year." In other words, he expects the growers to find their compensation for restricted output under the Stevenson Scheme in the enhanced price they will receive for the rubber they are allowed to export. It will be interesting to all parts of the trade to see whether the eventual advance in the price of the commodity will be sufficient to compensate British producers, taking the year as a whole, for selling a far smaller quantity than they could produce.

Current Share Prices

In view of this consideration, it may be observed that a small selection of marketable rubber shares quoted on the London Stock Exchange would compare at this time as follows:

Name	Nominal Value	Present Price	Highest 1926	Last Yr. Dividend
Anglo-Java	2s	7s 9d	10s	40%
Bukit Mertajam	2s	6s 0d	8s 1½d	40%
Grand Central	£1	47s 6d	56s 6d	27½%
Laras (Sumatra)	2s	5s 6d	7s 10½d	45%
Pelepah Valley	2s	4s 9d	8s 0¾d	40%
Perak Rubber	2s	5s 3d	8s 2d	40%

The dividends given above are those for the last full year for which data has been published; in some cases this is 1925 and in others the fiscal years ended on March 31, 1926. Reduced dividends for the current year must be expected in most cases, but it will be seen that in the cases given above this possibility has been discounted. Nearly all the dividends for the calendar year 1926 so far announced have been at reduced rates; this was of course expected since the average market price of rubber was nearly 1s (24 cents) lower in 1926 than in 1925.

MILLER TO HAVE USE OF CALLAWAY LABORATORY

Through the completion of arrangements with Callaway Mills, Inc., New York, for the control and operation of an entire cotton fabric manufacturing plant at Athens, Ga., the Miller Rubber Company, Akron, expects to solve the problem of an adequate supply of high quality tire fabric at an advantageous cost. The plant will be completely revamped and modernized to produce fabric to Miller specifications.

In the Miller factory at Akron is a completely equipped cotton mill where cotton research engineers are continually working to perfect the production of fabrics that are needed in tires. In the research buildings of the Callaway Mills at La Grange, Ga., is one of the most complete cotton laboratories in the South. With these facilities for cotton research at La Grange and the only cotton spinning mill laboratory in the rubber industry, Miller expects to proceed rapidly in the development of cotton cord.

Baldwin Buys Plant

The former Pontiac, Mich., plant of the Van Auken Top Co., has been purchased by the Baldwin Rubber Co., Pontiac, manufacturer of rubber mats and hard rubber specialties. About 10,000 mats daily will be the output of the plant which consists of several buildings on a 3-acre plot of land.

The Philadelphia Rubber Works Company

Manufacturer of

RECLAIMED RUBBER

of

STANDARDIZED QUALITY

NEW YORK
52 Vanderbilt Ave.

AKRON, OHIO PHILADELPHIA, PA.
Land Title Bldg.

BRITISH RAILWAYS USE TRUCKS FOR DELIVERIES

William O'Neil, president of the General Tire & Rubber Co., Akron, regards as significant a step being taken in England that will place terminal transportation on a new basis and greatly increase the use of trucks and truck tires. This step is the general adoption by one of four British railway companies of store-door delivery. The plan is to provide manufacturers with door-to-door facilities on a greater scale than heretofore and at a cost lower than that of straight truck transport.

"In America the railroads are fighting the truck and seeking legislation to hamper its competitive activity everywhere," said Mr. O'Neil. "In Great Britain it is interesting to note the recognition of the transportation process as continuous from producer to consumer. We believe American railroads will finally adopt the truck as inevitable and apply it to their own uses.

"The electric railways were formerly bitter enemies of the passenger bus which competed for their passenger trade. For a time the electrics were hand in glove with the steam roads in an effort to suppress the bus. Now the principal intercity bus lines are owned by their former foes. The busses open up lateral territory, feed the electrics and take the place of track extensions that would otherwise be necessary. So bus ownership is being centralized in stronger hands than when the individual independents began their experiments with made-over touring cars. And just as the bus has developed and changed, truck design and capacity will ultimately be modified for new duties, and new tire problems will arise."

Appeals Zenith Tire Suit

An appeal to the decree dismissing a suit of $250,000 against the directors of the defunct Zenith Tire & Rubber Company of Cleveland, O., was filed April 6 in Cincinnati by Edward G. Kirby, receiver for the company. The appeal was filed in the United States Appellate court. The suit was dismissed in September, 1926, after protracted hearings had been held.

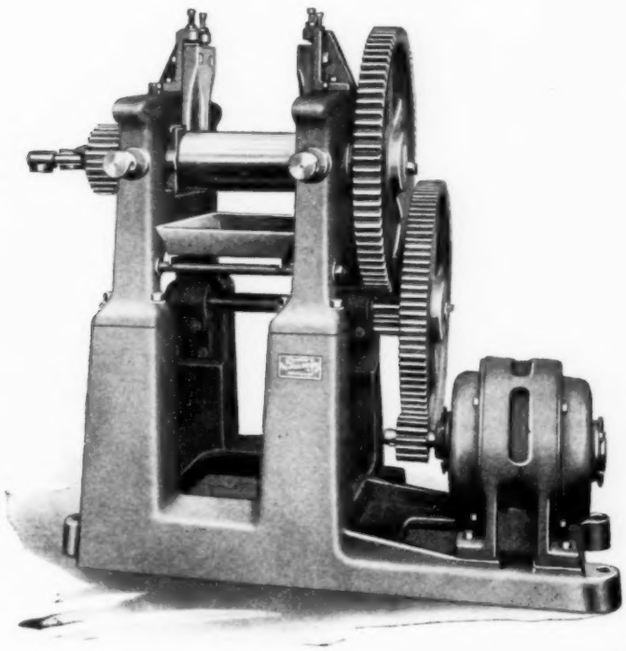
Sumatra Rubber Concession

According to a report to the Commerce Department from Donald Renshaw, trade commissioner in Batavia, a concession has been granted by Government decree for the erection and operation of a plant in Diambi, Sumatra, for washing native rubber.

CATALPO!

New Factory Equipment

ADAMSON INTRODUCES IMPROVED LABORATORY MILL



A new experimental laboratory mill has just been announced by the Adamson Machine Co., Akron, Ohio. The usual mill for use in laboratories has to be mounted on a rigid table or special base but the new Adamson mill is finished complete with pedestal or base, as illustrated, with provision on the base for attaching the motor direct to the driving gears. The working rolls are, therefore, at a convenient and proper height for the operator.

Realizing that economy of space is necessary in laboratories this new mill is designed to occupy the smallest possible space. The rolls are of the finest chilled iron and are ground on bodies and journals; the connecting gears are of steel; the drive gear is of semi-steel, and the motor pinion of noiseless material, all having cut spur teeth. The gears are all carefully guarded and all parts are complete and just as practical as on standard size mills.

CLASSIFIED ADVERTISING

10 cents a word, minimum charge $2.00, payable in advance.
Address replies to Box Numbers, care THE RUBBER AGE, 250 West 57th St., New York.

POSITION WANTED

Position wanted as Chemist, Development Engineer or Superintendent. Nine years experience in tires, mechanical goods, tiling. Perhaps can bring business netting $75,000 annually. Address Box 452, THE RUBBER AGE.

HELP WANTED

FOREMAN, RUBBER DEPARTMENT

Wanted, a foreman to take full charge of a rubber department in a pencil factory in New York district. Must know compounds, vulcanizing and rubber machinery, as well as all processes of erasers, penholder sleeves, etc. State experience, age, reference and salary. Box 455.

WANTED SALESMAN to sell Rubber Coated Calender and Spreader Fabrics either Single or Double Texture. Must be experienced. Address Box 454, THE RUBBER AGE.

FOR SALE

Small dental rubber factory. Plant A-1 condition. Going business. Selling coast to coast. Established trade marks. 26 highly successful formulas. Owner too busy other interests. $4000 to handle or will take partner. Hygienic Rubber Works, Port Huron, Michigan.

FOR QUICK RESULTS!
RUBBER AGE
WANT ADS
are best!

CATALPO!

VANSUL

Rubber Colors, Pigments & Fillers

Clay, Barytes, Sulphur, Lithopone, Red Oxide, Stearic Acid, Vansulite Whiting

A Complete Line of Chemicals and Compounding Materials Especially Processed for the Rubber Industry. Complete Problem Laboratory for your use.

VANSUL, Inc.
90 West St., N. Y.
Phone: Rector 9192, 6039
THEODORE G. SULLIVAN, PRES.

M.R., Mica, Colors, Palm Oil, Chrome Green, Mag. Carbonate, Domestic Whiting

VANSUL

INTERNATIONAL PULP CO., *41 Park Row, New York, N. Y.*
SOLE PRODUCERS OF PURE **ASBESTINE** SPECIALLY PREPARED FOR USE IN RUBBER
Covered and Protected by Letters Patent Registered at U. S. Patent Office, Washington, D. C.
LIBERAL WORKING SAMPLE FURNISHED FREE

ROYLE

Tubers
Strainers
Insulators

Localized heating and cooling.

Parts interchangeable.

Choice of drives.

Everything accessible and under complete control.

Divided Jacket Royle Strainer with 6-inch cylinder.
Output equal to the ordinary 8 or 10-inch machine.

JOHN ROYLE & SONS, Paterson, N. J.

WITCO

DIRECT FACTORS

MANUFACTURERS and IMPORTERS

Our Technical SERVICE and EXPERIENCE Offered in

Aluminum Filler
Aniline Oil
Antimony
Asbestol Filler
Barytes
Benzol
BLACKS (Misc.)
Blanc Fixe
BLUES (Misc.)
BROWNS (Misc.)
Carbon Tetrachloride
Carbon Bisulphide
Carbon Black
Caustic Soda
Clays
Chromium Oxide
Diatomite
Diphenylguanidine
Fossil Flour
GREEN (Misc.)
Hydro Carbon
Infusorial Earth
Indian Red
Lamp Black
Lead Oleate
Lime
Litharge
Lead—Red
Lithopone
Magnesia
Mica

CHEMICALS, FILLERS and COLORS

For all classes of mixing and cure supported by our own

Complete Experimental Chemical and Physical Laboratories

COMMUNICATE WITH

Wishnick-Tumpeer, Inc.

NEW YORK 253 Front St.
CHICAGO 365 E. Illinois St.
CLEVELAND Davenport & E. 14th St.
AKRON 1101 Akron Savings and Loan Bldg.
BOSTON 185 Devonshire St.

"The Most Active Organization in the Field".

Mineral Rubber
Montan Wax
Ochre
Palm Oil
Pine Tar
Pine Pitch
Pitch—Burgundy
REDS (Misc.)
Red Oxide
Rosin Oil
Rubber Factice
Rubberite Compound
Rubtac
Slate Flour
Soap Bark
Soapstone
Stearic Acid
Sulphur
Talc
Thiocarbanilid
Titanium White
Triphenylguanidine
Ultramarine Blue
Vermilion
Venetian Red
White Lead
WHITES (Misc.)
Whiting
YELLOWS (Misc.)
Wood Flour
Zinc Oxide
Zinc Stearate

The RUBBER AGE
The Only Twice-a-Month Rubber Publication

Published by
THE PALMERTON PUBLISHING CO., Inc.
Fisk Building, 250 West 57th St., New York, N. Y.
Telephone—Columbus 6430-31-32

P. L. PALMERTON — President and Editor

Published on the 10th and 25th of each month by Palmerton Publishing Co., 250 West 57th St., N. Y. C. and Highland N. Y. Address correspondence to N. Y. office.

Subscription rates: Domestic, $2.00; Canada. $2.50; Foreign, $3.00. Single Copies, 20c.

Entered as Second Class Matter, June 10, 1920, at the Post Office at Highland, N. Y. under Act of March 3, 1879.

Forms close 10 days before publication date. If advertising proofs are desired, two weeks should be allowed. Advertising rates on application.

Vol. 21 APRIL 25, 1927 No. 2

The Luxury Tax

BRITISH rubber plantation interests who have expended a great deal of thought and money in trying to increase the world's consumption of rubber appear never to have given serious consideration to assisting the automobile to reach a popularity abroad somewhat resembling that in the United States. It is by the automobile that the real demand for crude rubber is created, but we read much more about prizes being awarded for rubber tooth brushes and soap dishes than for the removal of obstructions now impeding the use of the automobile.

Europe continues to treat the motor car as a luxury in spite of the compelling demonstration of utility that has been staged in the United States for the last ten years. All the chief industrial nations of Europe levy heavy ownership taxes on the motorist. Even in Great Britain, where the propoganda of the rubber shareholders might have had a chance, the automobile is taxed as a luxury, thereby restricting its numbers. The present British tax is £1 per horsepower.

Now comes a stiff import duty on tires which will have the effect of raising tire prices and thereby increasing the expense of motoring. Of all nations of the earth, America has the least ground to quarrel with Britain's tariff policy, but whenever the cry about increasing rubber consumption is heard, it cannot be forgotten that a good opportunity has been overlooked at home.

Owning Your Own

IN REPORTING the testimony of E. G. Wilmer, former Goodyear president, in connection with the legal fight of the Goodyear stockholders which is now in progress, most of the newspapers have given prominence to his remarks on the company's ventures in rubber and cotton growing. The statement has appeared in many places that Mr. Wilmer donounced both these projects as failures, that he believed they were unnecessary and contributed to Goodyear's financial troubles in 1921.

Having invested substantial capital, said during the trial to have amounted to $19,000,000, in cotton and rubber plantations, Goodyear did not have it liquid for use when it was urgently needed and from that standpoint the investments were certainly contributory to the company's financial distress. That fact alone, however, would not give sufficient reason for calling such investments unsound. It would not even be fair to say that these particular ones were unwise since the extent of the post-war stringency could not be foreseen.

But it does not appear that Mr. Wilmer criticized the essential character of these investments as bluntly as the newspapers made out. He was perhaps justified in calling the cotton plantation a failure since its real long staple to short staple cotton. Mr. Wilmer's comment on the rubber plantations centered principally around their inadequacy in comparison with Goodyear's rubber consumption. He is reported to have said that in spite of the large investment which the plantations had made necessary, when fully developed they could supply only enough rubber to satisfy the normal Goodyear requirements for three weeks.

It is doubtful if Mr. Wilmer would sweepingly denounce a policy of having rubber companies through their own holdings, guarantee a substantial part of their raw material needs. The fact that the Goodyear plantations could not go very far in that direction, either in 1921 or 1927, should not condemn the policy since everything must have a beginning. The advantages which rubber manufacturing companies receive from their planting subsidiaries in 1927, if properly studied, will have more bearing on the policy of other companies than what Mr. Wilmer did or did not say about 1921.

Mr. Edison's Experiments

THERE is a section of the press now given to expressing doubts that Mr. Edison's rubber growing in the southern states, even if it should be as completely successful as he dreams, would be an unmixed blessing. Once rubber growing is established in any part of the United States, it is pointed out, there will come a time when the industry will have a hard time to compete with other rubber growing regions of the world. If the plantations in the South were successful, they themselves would be a factor in reducing world rubber prices to the point where United States production would be unprofitable. What then? A stiff import duty, of course, is the reply that is advanced.

There is undoubtedly something in such an argument. Infant agricultural industries in this country certainly have good chance of being protected when competition becomes too keen to bear. The pessimists expect that a tax to protect an American industry would be no less onerous than an indirect tax to maintain the position of a British industry. The fear is even expressed that on account of it being a domestic problem, the American tax might become the heavier of the two.

But all this anxiety seems a little premature, even if Mr. Edison does not take congnizance of it and quit his experiments altogether. The famous inventor himself admits that the gentlemen of the press have glorified his few vines with a vision that he would scarcely have dared describe, and he has accordingly adopted a policy of busy hopefulness. And there is always the possibility that the administration will have changed before Mr. Edison's rubber farmers are ready to make their drive for a protective duty.

The Electrodeposition of Rubber

Rubber May Be Deposited on Metal as a Permanent Covering Or Metal Anodes May be Used for Forming Rubber Products

By S. E. Sheppard[1]

Research Laboratory, Eastman Kodak Co., Rochester, N. Y.

TO DESCRIBE the process of electrodeposition of rubber, I shall have to precede the actual subject by a brief discussion of the properties of electrically charged suspensions and also by some reference to the nature of rubber and rubber latex. In the form in which we commonly meet it, rubber is a remarkably resilient solid, distinguished also by high electrical-insulating properties; therefore at first sight it is not a very promising material for an electrochemical process. But rubber originally appears in nature as latex, a milky or rather a creamy fluid that exudes from the inner bark of certain plants or trees when they are cut. Usually the latex is collected in open vessels and crude rubber is coagulated from this by a process that resembles somewhat the curdling of milk. The curd or coagulum is washed and sheeted mechanically at the plantations and is then exported in bales.

Fresh latex is an unstable material that rapidly undergoes a series of chemical and physical changes that lead to coagulation unless this is overcome by preservatives such as ammonium. Due to the fact that the chief rubber-producing plants are tropic growths, intensive scientific investigation has been made only recently on the properties of latex itself, although as early as 1830 Thomas Hancock, one of the pioneers of the rubber industry, was carrying out experiments on the industrial possibilities of latex. Microscopic observations show it to consist of a number of microscopic granules suspended in a watery fluid.

Not until 1906 and 1907 was a real fundamental physicochemical research made on the properties of rubber latex. Investigations then made by Victor Henri, at that time assistant professor in the laboratory of physiological chemistry at La Sorbonne, Paris, contained the germ of the process of electrodeposition of rubber, and it was my good fortune to be working in Henri's laboratory at the time. Henri showed that the particles of latex were in constant Brownian movement, which will be described later, and further that latex behaved like a typical negatively-charged colloid; that is, the particles were precipitated and coagulated by positively charged ions, and the effect increased with increase in the valency of the ion. The negative charge on the particles, already indicated by their reaction to positive ions, was more conclusively proved by Henri by demonstrating their transport in the electrical field. He showed that if the latex was diluted with water or weak ammonia and placed in a U-tube and a current passed between two platinum electrodes the rubber particles moved in the direction of the anode. This experiment forms the nucleus of the process of electrodeposition.

Many years later, when working in the research laboratories of the Eastman Kodak Co. on aqueous suspensions and emulsions, this experiment of Henri's came back to my mind. The question arose, If rubber particles in aqueous suspensions can be transported by the electric current, can they not be deposited electrically and, so to say, rubber-electroplated?

At that time it was very difficult to obtain samples of rubber latex. Van Rossem, director of the Netherland Rubber Institute, has pointed out that even in 1921, at the Fifth International Rubber Exhibition in London, latex was still a scientific curiosity. As I was unable to procure rubber latex at once, I took up with L. W. Eberlin the production of an artificial rubber latex, and we prepared stable rubber-emulsions from benzene solutions of rubber by emulsifying the rubber from these with ammonium soaps. We found that such emulsions and dispersions gave negatively charged particles. Further, the rubber was precipitated from such dispersions by positive ions, moved with the electric current toward the anode, and was deposited on an anode as a continuous film. The behavior was entirely parallel to that of natural latex, as we were able to demonstrate as soon as we secured some of this.

Although these experiments showed that electrodeposition was possible, the results were still a long way from a practical application. Rubber must be vulcanized to be useful. Such electrical coatings, if thin enough, might be vulcanized externally by the use of sulphur chloride or by other methods, but such processes have only a limited application. The essential requirement is that the rubber produced shall be similar to rubber compounds that have been developed by

[1]Paper read before the Detroit Section of the Society of Automotive Engineers. Reprinted by Permission.

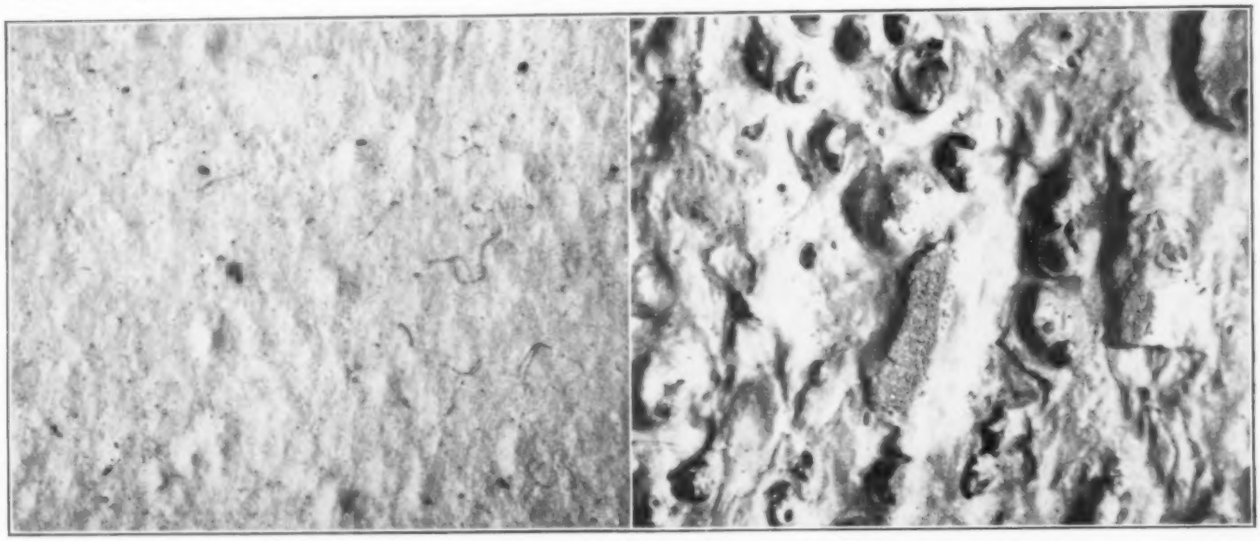


Fig. 1—Deposits of Rubber on Cadmium, at left, and on Aluminum, at right, Magnified 60 Diameters.

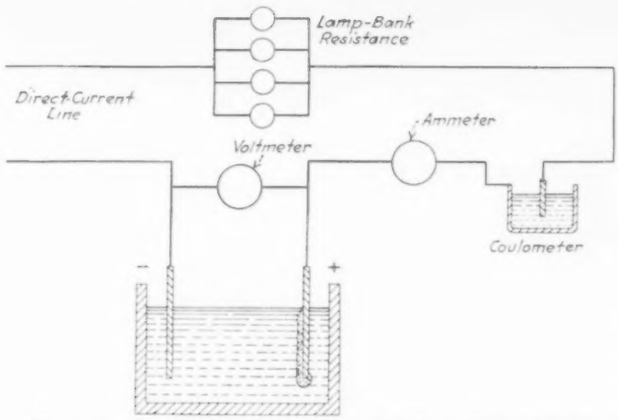


Fig. 2—Electric Circuit for Rubber Deposition
Direct current of from 30 to 50 volts is used and the current density may be varied considerably but usually is of the order 1/10 to 1/3 Amp. per sq. in.

technologists since the discovery by Goodyear of the remarkable effects of heated sulphur upon rubber. This means that it must be possible to deposit electrically, together with the rubber particles, sulphur, mineral and organic fillers, accelerators, softeners and other materials according to various specific requirements.

The particles in natural rubber-latex and in well-made artificial dispersions are of the order of 1 micron in diameter, that is 0.001 mm. (0.00004 in.) more or less. It is necessary that the sulphur and other substances be brought to a comparable state of subdivision to be mixed uniformly with the rubber. But other conditions are requisite besides that of subdivision. The electric transport of suspended particles depends on the existence of the contact-potential between the particles and the liquid, which gives rise to a charge either positive or negative. If suspensions of opposite charge are mixed, within a certain zone of equivalent concentration, they will precipitate each other. Such unstable conditions must therefore be prevented in preparing mixtures of rubber latex with suspensions of sulphur, pigments, and so on. Sulphur is readily wetted by water and usually takes a negative charge, hence, no great difficulty exists in incorporating it with latex. On the other hand, certain fillers, notably insoluble oxides, tend to take a positive charge and must be stabilized, either by what is termed complex ion-formation or by protective colloids.

The transport of electrically charged particles is termed electrophoresis. The application of this to the forming of deposits of compounded rubber was made independently by me and L. W. Eberlin in this country, and by Dr. Paul Klein in Budapest, Hungary, in 1921 and 1922. A motion-picture film, which was made by combining a cinematographic camera with a microscope and photographing the movement and electrodeposition of rubber particles in a very thin film on the microscopic stage, gives a fairly clear idea of the action that actually occurs.

The electric circuit for plating rubber is simple. (Fig. 2). Direct current of from 30 to 50 volts is used, while the current density may be varied considerably, but is generally of the order of 1/10 to 1/3 amp. per sq. in. It might be supposed that, since rubber is essentially an insulator, the first thin film would prevent further deposition by blocking the current, but the deposit as formed can be redispersed readily by reversal of the current, and the deposit builds up steadily as a layer of many particles superposed on one another. The fact is that the deposit is an uncoagulated reversible gel that contains a continuous film of fluid which is an electrolytic conductor; therefore, the deposit can be built almost indefinitely. The actual rate of deposition is very rapid and depends upon the voltage and the current density used. (Fig. 3). Moreover, when a mixed rubber, sulphur and other ingredients are electrodeposited, the composition remains substantially unchanged during coating and the proportion of the components in the deposition is the same as that in the solution.

Although this is not desirable in practice, the electrodeposition of rubber can be continued until the bath is exhausted. The concentration affects the rate of deposition and means have been developed for securing constancy and uniformity of concentration during the process.

The current efficiency in the process is very high as compared with that in the electrodeposition of metals. This is a consequence of the fact that the mass of colloid or suspended particles relative to their charge is very high compared with that of an atomic or molecular ion. In early experiments on this plating from nearly pure rubber-suspensions approximately 1,500 grams of rubber and 2,000 grams of a mixture of one-half rubber and one-half zinc oxide were deposited per farad. In later work considerably higher values have been obtained; namely, up to 4,850 grams of rubber per farad, with a current efficiency of 0.02 kw-hr. per lb. This means that as much as 160 times the amount of rubber can be deposited as could be plated of nickel for the same amount of current, while a deposit of 1,400 times as thick as the equivalent nickel-deposit is obtained.

It has been stated that the gel originally deposited contains liquid which must be removed by drying before vulcanization. However, the amount of liquid remaining need not be more than 50 per cent of the solids and can be reduced to even less. It is removed readily by any of a variety of dehydrating processes.

Behavior of Metals as Electrodes in Rubber Deposition

	Character of Electrodeposition	Chemical Effect on Rubber
Zinc	Good	Useful
Cadmium	Good	Useful
Silver	Good	Harmless
Copper	Good	Destroys
Iron	Fair to good	Dangerous
Tin	Good in thin layers	Harmless
Platinum	Fair	Useful
Nickel	Poor	Unknown
Aluminum	Poor	Harmless

Another particularly valuable method, which was worked out by Dr. Klein and his collaborators, consists in the use of a porous non-conducting diaphragm surrounding the anode and electrolytically connected with it. Upon electrolysis of a rubber suspension, the rubber is deposited upon the diaphragm while the gaseous products due to discharge of hydroxyl ions are evolved upon the anode itself. The action of this diaphragm is similar to that of the rubber gel itself in allowing a continuance of the rubber deposition. (See Fig. 4).

Any such diaphragm or membrane takes on a potential difference such that the side away from the anode is positively charged and the side adjacent to the anode is relatively negatively charged. At the same time a relative increase of hydroxyl-ion concentration occurs which affects the surface of the diaphragm remote from the anode and results in an increase of the hydroxl-ion concentration on the side adjacent to the anode. The increase of the hydrogen-ion concentration probably is partly responsible for the deposition of the rubber

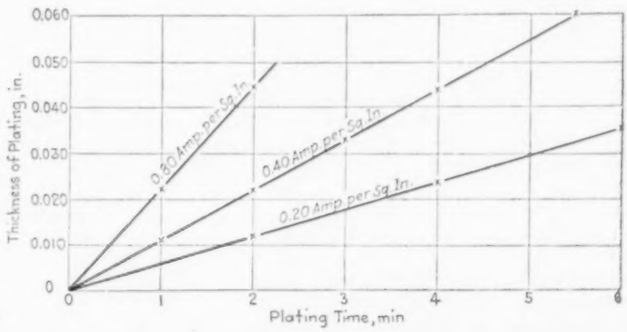


Fig. 3—Relation of Rubber Deposit to Plating Current
The rate of deposition is very rapid and depends upon the voltage imposed and the current density used. The curves shown are for a voltage of 50 to 65 volts.

on the diaphragm. In some respects the phenomenon resembles the so-called electrostenolysis of metals which consists in the deposition of metal in cracks through a non-conducting diaphragm when interposed in the electrodeposition of metals.

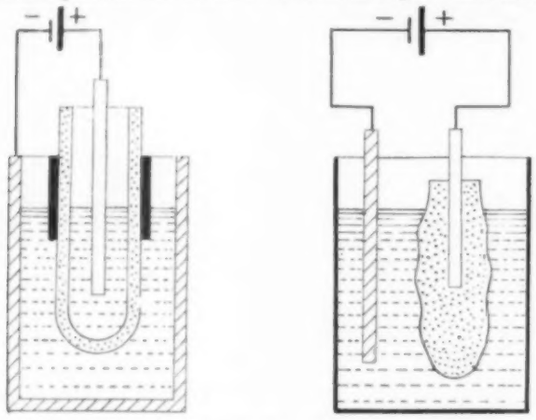


Fig. 4—Klein's Porous Non-Conducting Diaphragm
The diaphragm surrounds the anode and is electrolytically connected with it. Rubber is deposited upon the diaphragm while gaseous products due to discharge of hydroxyl ions are evolved upon the anode.

If we wish actually to deposit rubber on metal as a permanent covering, or to use metal anodes for forming rubber products, we can also make a selection or choice of the anode metal. For this purpose the metals may be divided electrochemically into three classes, in respect of their behavior as anodes, in electrolysis. The metals in Class A are completely attackable; that is, they pass into a solution as metal cations, with formation of oxides that are more or less soluble in the solution. Zinc, cadmium and magnesium are examples. (Fig. 1). The metals in Class B are not attackable and phenomena of passivity can intervene. In this class the anodic potential can vary widely with the metal and conditions of the solution. This class includes tin, copper, iron, nickel and chromium. In Class C the metals are only slightly attackable or nearly completely unattackable. Platinum, palladium, iridium, gold, the so-called noble metals, are typical of this class and behave as irreversible oxygen electrodes. Practically, the behavior of metals as electrodes in rubber deposition is illustrated in the table on the preceding page.

Zinc is Most Satisfactory Metal

The general behavior shows that zinc is the most satisfactory metal and, while attention has been and is being paid to direct deposition upon other metals, the most promising procedure at present consists in giving the metal a preliminary zinc-coat, either by galvanizing or electroplating.

It is comparatively easy to deposit rubber so that it will strip readily from the metal when dry, but it is not easy to deposit it so that it will adhere firmly after deposition, drying and vulcanizing. However, an adhesion has been secured that is satisfactory for many purposes where high mechanical strain is not involved and that is sufficient for many purposes, such as coating wire and other bodies of simple contours. Rubber that is to form a permanent coating upon metal usually does not need to possess the highest tensile-strength and elasticity. It is therefore a valuable feature of the process that not only high-grade rubber-latex, but also redispersed rubber-reclaim, may be used, and coatings of the latter are found to give adhesion more readily than pure rubber. The problem of securing the utmost adhesion of highest-grade rubber has not yet been solved but valuable progress has already been made. The advantages of the process for the continuous coating of wire for protecting metallic surfaces, as in screens, and for resisting corrosion are definite. It is evident, therefore, that a large and valuable field lies open to the process as it becomes perfected.

It is possible to produce almost any kind of known cure, by incorporating sufficient sulphur, fillers and accelerators. Rubber can be formed and cured to any stage of softness and elasticity up to the typical rigid and inextensible hard-rubber. One aspect of vulcanization in which the electrodeposition process has a distinct advantage is that so-called ultra-accelerators can be used. These are substances that so speed up the process of vulcanization at ordinary temperatures that they cannot be blended on the rolls because the materials would begin to vulcanize and scorch. In our process, which is conducted throughout at low temperatures, these ultra-accelerators can be deposited and successful vulcanization effected during the final drying process at ordinary temperatures.

With regard to the finishing and appearance of the rubber, any of the available dyes can be used for coloring it, including dyes that are insoluble in water and are deposited with the rubber. Graining can be done mechanically on the plastic rubber before it is completely dry, or a natural grain may be left by suitable modification of the electro-osmotic condition.

Finally, the aging properties of the electro-rubber, even without the addition of age-resisting compounds, are superior to those of rubber made in the usual way yet such resisting compounds can be used to full advantage.

[*Editor's Note: At the same meeting in Detroit at which the above paper was read, the commercial possibilities of the electrodeposition process were discussed by J. W. Schade, director of the Goodrich laboratories. That paper is reprinted in this issue also, beginning on the next page.*]

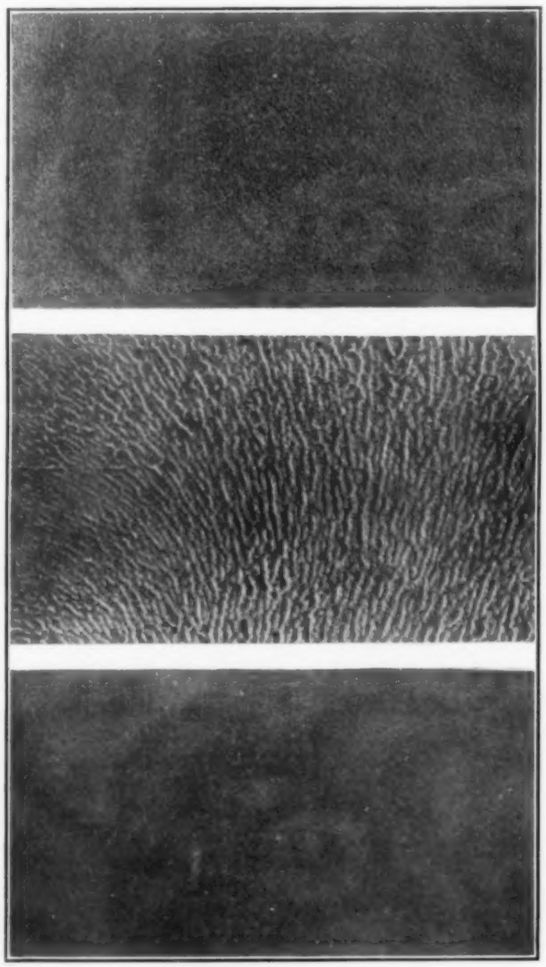


Fig. 5—Natural Grain of Electrodeposited Rubber
Such grains can be left by suitable modification of the Electro-Osmotic condition. Graining can also be done mechanically on the plastic rubber before it is completely dry.

The Commercial Possibilities of The Anode Process

Experiments Indicate That Electro-Deposition of Rubber Will Have Definite Advantages in Competition with Present Milling Operations

By J. W. Schade
Director of Laboratories, B. F. Goodrich Co., Akron.

The commercial success of a new process will be dependent on the competitive qualities of the goods made by its use—they must give equal or better service at an equal or lower price. In this address before the Detroit Section of the S.A.E. Mr. Schade enumerates the advantages of the anode process which he believes will make it commercially successful. Briefly summarized, the advantages he claims for it are: Tougher and stronger products, reduction in the quantity of material used, applicability of the process to dispersed reclaimed rubber, reduction in size of plant and equipment needed, lower labor and power costs, reduction in waste of material, and applicability of the process to a variety of uses.

ALTHOUGH IT cannot be said that a comparison wholly fair to the anode process has as yet been made, there is sufficient experimental evidence in hand to confirm the early opinion of the investigators that stronger and tougher rubber material can be secured by that process than by the manufacturing operations used in the rubber factories at the present time. This we believe to be due to the character of the rubber particles in the latex.

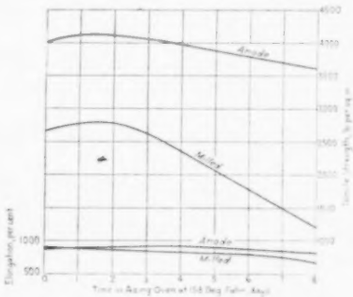
The rubber particles in the latex are not homogeneous; the outside of each particle is decidedly tougher than the center. The rubber latex is therefore a mass of particles that have relatively tough coatings and adhere together. This structure obtains also in coagulated latex which has not been milled in any way. When put on masticating rolls, however, the chains of particles are torn apart, the particles are ruptured and a marked change occurs in the structure of the rubber. Milled rubber is softer, stickier, and more plastic than unmilled rubber, while the anode rubber, as deposited, is tougher than either milled or unmilled rubber. This toughness of deposited articles makes it much easier to strip them from the forms in the uncured state without damage. Not only have these changes occurred in the unvulcanized milled product, but the rate of vulcanization will be slower and the physical properties of the vulcanized product will be deteriorated to some extent. Milling is an essential process in all rubber manufacture today.

It has long been recognized, also, that finely divided pigments give better physical properties in vulcanized rubber-mixtures than coarser particles of the same materials. Furthermore, the rubber manufacturer of today is limited in his use of powerful accelerators of vulcanization by the temperatures developed in mixing, calendering, or tubing. It is known that, in general, short periods and low temperatures of vulcanization improve the physical properties of the vulcanized rubber-mixtures. The anode process meets all of the three theoretical requirements. The rubber is not masticated, the pigments are fine enough to remain suspended in the water mixture, and powerful accelerators may be incorporated without danger of vulcanization before the desired article is formed.

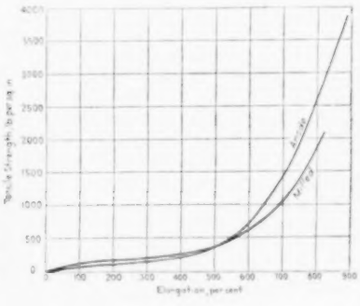
We conclude, therefore, that the anode process will yield products much superior in strength, toughness and aging qualities to similar compounds processed by the usual methods. This is of great significance to the industry. What has been done in the field of metals and alloys may be repeated with rubber. Just as lighter, stronger and more serviceable structures have been made through the development of special steels, we look for rubber products made by the anode process to yield better service with a marked saving in the quantity of material used. In 1926 the production of inner tubes in the United States reached the amazing total of about 76,000,000 tubes. Assuming that, by the use of the anode process, ½ lb. of rubber per tube, on the average, could be saved, we should thus conserve our rubber supply to the extent of 38,000,000 lb., or a little more than 4 per cent of the total amount of rubber imported last year. This, we believe, is not impossible, and by extending the saving to other lines of production it is reasonably conceivable that 10 per cent of our rubber may be saved.

Let me remove, also, any misconception that this method is applicable to depositing natural latex only. Rubber artificially dispersed has been deposited successfully, and mixtures containing dispersed reclaimed rubber have been formed into articles with improvement in quality over mill-mixed materials. We have found that by handling the reclaimed rubber in dispersed form the usual variability is surprisingly diminished.

Application of this principle of reduced volume of material



The chart to the left shows the relative aging properties of similar compositions made by the anode and mill processes. The stocks were subjected to the Geer Aging Test which consists in heating the samples in air at 158 degrees Fahr.



To the right are shown stress-strain curves for electrodeposited and mill-mixed rubber compounds. The greater tensile strength and elongation of the anode-deposited compound is apparent.

Comparative Power-Consumption by Milling and Anode Processes

Milling Process Power Consumed per Ton of Dry Material, Kw-Hr.			*Anode Process* Power Consumed per Ton of Dry Material, Kw-Hr.		
Operations	90% Rubber Mixture	50% Rubber Mixture	Operations	90% Rubber Mixture	50% Rubber Mixture
Washing Rubber	301	167	Centrifuging Latex ...	8	5
Mill Mixing	460	460	Dispersing Pigments and Tank Mixing	86	225
Warming and Calendering	540	540	Deposition on Zinc ..	180	100
Total	1,301	1,167	Total	274	330

to the design of rubber goods is evidently one method of lowering material costs. Moreover, we have reason to believe that rubber in the form of latex will eventually cost little, if any, more than sheeted or creped crude rubber as it appears on the market today. Concentrated latices that contain only 25 to 35 per cent of water, as compared with 60 to 65 per cent in natural latex, have appeared on the market. These concentrated latices may be diluted and used as latex and will, we believe, also tend to reduce the cost of rubber in latex form. However, even though there should be a slight increase in the cost per pound of material, in many instances the savings resulting from reduction of volume per article and from other features of the process will more than offset this. We may expect then, not only a better quality, but in most cases a lower article cost, also.

The cost and size of a plant is reflected in the manufacturing cost of goods in operating charges for rental or interest, depreciation, heating and lighting, amortization, and, to some extent, for maintenance. The cost of a plant to manufacture articles by the anode process will, we estimate, be less than is now required to manufacture rubber goods. We have no detailed figures to offer but simply contrast the type of equipment required for each. Today we find in well equipped factories a number of heavy high-powered machines and see considerable floor space given to storage of partly processed materials before they are ready to be formed into salable goods. We find rubber washing-mills, mixing-mills, warm-up mills, calenders, tube machines, cement churns, and spreading machines. We find, also, large quantities of cloth wrappers, or so-called liners, and shells, or cloth-leaved "books," in which to store partly processed material so that the sticky surfaces of the rubber or rubberized cloth will not adhere to one another.

Contrast the machinery mentioned, some of which requires special foundations, with that required for the anode process: colloid mills, tank mixers, deposition tanks. The relative cost of power equipment will be indicated in the saving in power. For rubber articles containing no fabric, cloth liners or books will not be needed, the machinery will require no special foundations, no industrial trucks will be required to transport materials from wash-room to dry-room, from dry-room to compound room, and so on from step to step in the process, and floor space now used in storing materials in process will be greatly reduced. Space now required for forming articles by manual labor is, in certain instances, much greater than the space required for forming in deposition tanks. In some goods that contain fabric, considerable saving also will be possible. We conclude, therefore, that the lighter, cheaper machinery and the reduced floor space will present substantial economies for the new process.

Labor is costly. The whole trend of American industry for years has been to increase the output of each operator engaged in manufacturing processes by devising new processes, simplifying and changing the sequence of operations, eliminating superfluous handling of materials, making motion and time studies, and invention of automatic machinery. It is perhaps axiomatic to point out that the transportation of materials through pipe lines by gravity is cheaper than repeated loading and unloading of trucks and that the placing of materials by manual labor into molds and the building of articles manually on forms with tools for rolling, shaping, and trimming is more expensive than the deposition of materials on a group of forms by electric current. It may be axiomatic, also, to state that intermittent processes in which material is treated, transported and stored between separate operations are more costly than those in which subsequent operations follow one another and are automatically balanced as to the number of units or pounds produced and as to the time of completion of each step; or that in industry requiring skilled labor the labor turnover entails appreciable and sometimes serious increase in cost of production due to the necessity of paying the unskilled worker a living wage during his learning period. These are axiomatic; and because we see in the anode process the possibilities of easy application of mechanical controls to make processes continuous and automatic, the replacing of skilled labor with power, and the reduction of costly transportation of partly processed goods, we believe confidently it has inherent advantages over present processes.

Some figures that indicate a considerable saving in the power cost for mixing and depositing by the anode process as against the usual operations in handling materials by the present processes are given in the table on this page. Figures for the old process are averages for one year's factory operation; those for the anode process are based on laboratory performance. By decreasing the first and increasing the second each 30 per cent to cover variations for differences in compounds mixed on mills and possible inaccuracy in the anode figures, all indicated saving of approximately 50 per cent still results. We may reasonably expect, then, a substantial reduction in power cost.

Wastage of Material is Minimized

For almost every article made in rubber factories today a substantial charge for waste is allowed. When blanks are cut from uncured stock for molding or building on forms, some of the material must be remilled or recalendered before it can be used again. Cloth frictioned or coated with rubber and cut to definite shape or width entails a waste of the rubberized fabric. This form of waste has less value than the fabric or the rubber would have separately. Many molded articles have rinds where the sections of the mold come together. These must be trimmed off and this vulcanized waste has even less value than the corresponding unvulcanized material. In building articles on forms it is often necessary to trim the stock, which is another source of waste. By the anode process it is possible, in many instances, to form articles without any necessity for trimming and with no unvulcanized waste except that which is spilled or coagulates naturally in the process, and by well regulated handling of the mixtures this has been reduced to a very small amount.

Many of the processes in use today inherently carry liability to waste in labor or material. Rubber varies in the time required to plasticize to a definite consistency on a mill. Reclaimed rubber, made as it is from scrap, necessarily varies in its physical properties. Powerful accelerators can be mixed without partial vulcanization on the mixing mills only when great care is exercised. Because of the variability in raw materials and mixing temperatures and of human fallibility of the mill man, batch stock will at times be unsuited for subsequent operations and must be worked away at an increased labor cost and sometimes at a reduced value for the material.

The labor cost of running such defective stock through subsequent operations, such as tubing, may be increased. The number of feet per minute delivered from a tubing-machine may be reduced as much as 50 per cent by variation in batch stock.

Calendered stock will vary as to the proportion of suitable material it contains. Blisters, too great or too little tackiness of surface, variation in thickness, rough surface, too tightly stretched fabric, or scorching of the rubber compound are experienced in every rubber factory that uses calendered stock, and all of these defects cause reduction in material value or increased cost of handling or both.

For successful molding of articles the material must have a definite plasticity or flow in the molds, surfaces which flow

[Concluded on Page 84]

Puncture-Sealing Compounds For Pneumatic Tires

Bureau of Standards Reviews Their Claims and Points to the Significance of Their Having Failed to Come into Common Use [1]

METHODS DESIGNED to prevent the escape of air from pneumatic tires are almost as old as the pneumatic tire industry itself. Previous to the year 1900, when the bicycle was at the height of its popularity, at least eight patents had been issued covering ways for making a pneumatic tire "puncture proof." With the later development of the automobile tire and continuing up to the present time it seems to be the goal of inventors to produce a "puncture proof" tire.

The use of the words "puncture proof" is in a way a misnomer, the Bureau of Standards points out, as the majority of the ways devised for puncture-proofing tires are rather ways of sealing punctures and not preventing them. However, the words "puncture proof" are commonly used in connection with any means to prevent or to seal punctures. At least five different methods have been, or are being, used to accomplish these purposes.

Five Methods For Puncture Sealing

(1) By the use of some kind of "filler" in the casing instead of a pneumatic tube. This gives a real puncture-proof tire, but departs from the pneumatic principle. The tire is no longer pneumatic, but is equivalent to a solid or cushion tire.

(2) By use of a compression inner tube. If the rubber in the inner tube can be put under sufficient compression it will automatically tend to seal itself when punctured. This is done in practice by making a tube with a very heavy wall and a larger periphery than the inside of the casing. The disadvantage of such a tube is its weight, and consequent high first cost.

(3) By molding substances (usually metal) in the tread portion of the casing to prevent an object, such as a nail, from piercing the casing. Satisfactory tires that are at least comparatively puncture proof have been made in this manner for several years. It is the general opinion that if the tire is not kept properly inflated, there is more chance for "separation" to develop in a tire of this kind than in one of standard construction.

(4) By the use of a plastic material in the tube or inserted between laminations in the tube wall. In case of a puncture this plastic material is intended to flow slightly and produce a seal.

(5) By the use of mixtures of liquid and solid materials which can be forced through the valve stem of a standard inner tube. Such mixtures, probably because of their simplicity of composition and the ease with which they can be used in standard tire equipment, seem to have met with the largest degree of success. It is with this last method of overcoming punctures that the remainder of this article will deal.

During the last 30 years at least 65 patents have been granted for compounds to be placed in inner tubes to render them self-sealing when punctured. Although some few of these mixtures are soft plastic materials which contain rubber or rubber-like substances, by far the greater number of them are essentially suspensions of fibrous or flaky materials in water or an aqueous solution. Although the simplest are composed of only fiber and water nearly all contain:

(1). A finely ground fiber; (2). Water; (3). A material to aid in holding the fibers in suspension: (4). A material to lower the freezing point of the liquid; and (5). A preservative. In addition, dyes and odorous materials are often added to disguise the other ingredients.

The following solid materials arranged roughly in the order of their popularity have been used: Asbestos, mica, cork, wood fiber, paper pulp, bran, bark of special types, ground linseed, moss, leaves, grass, seeds, and oatmeal.

To aid in holding the fibers in suspension the following have been employed: Flour, starch, dextrin, gelatin, glue, sugar, glucose, caramel, gum arabic, soap, and water glass.

As materials designed to lower the freezing point, alcohol, glycerin, salt, and calcium chloride have been employed.

As preservatives, formaldehyde, carbolic acid, boric acid, chloroform, and certain asphaltic materials have been used.

In addition to patented products, there are many others, but all which the Bureau of Standards has had occasion to examine fall under the foregoing general classification. Various proportions and combinations are used and in many cases other materials added, as, for instance, whiting, clay, and graphite, which probably aid the fiber in the sealing process, and other organic liquids, such as "cactus sap," which may add desirable properties.

In using these compounds there must be enough to coat the inner surface of the tube with the fibrous or flaky material as well as a surplus to flow to the point where the puncture occurs.

Most persons are familiar with the old method of repairing a hole in a teakettle by inserting a small piece of cotton cloth. The sealing of an inner tube by these fibrous compounds works in a similar manner. An examination of a hole in a tube which has been sealed will show it filled with a plug of fiber which is not in any way cemented to the rubber. In other words, the fibrous mixture flows around inside the tube and in the case of a puncture the fiber is crowded into the opening by the pressure of the air in the tube. It is claimed for some compounds that they harden on coming in contact with the air. This hardening process takes place slowly and in the meantime the fiber plug alone must act as the seal. Punctures in the nature of a cut or tear are difficult or impossible to seal.

Sealing Properties Demonstrated

If a material consisting, for instance, of ground asbestos fiber and water glass, or leather fiber and glycerin, is placed in an inner tube with a quantity of water and the tube is inflated in a casing, the puncture-sealing properties may be demonstrated in a surprising way. A 6-penny nail can be driven through the casing, the tire revolved so that the portion of the nail inside the casing becomes coated with fiber, and the nail removed without allowing an appreciable amount of air to escape. It is sometimes necessary to turn the tire so that the puncture is on the downside in order that the surplus compound will cover it. If larger holes are made in the tube they may or may not seal, depending on their shape and size. Seals can often be obtained with a hole made by a 30-penny nail, but as a rule the compound can not be depended upon to seal large holes.

The fact that the puncture-sealing properties can be shown in such a surprising way as by deliberately driving nails into tires, has led to demonstrations of this kind being used very effectively in sales promotion. From the foregoing it will be apparent that such a demonstration proves very little concerning the value of any particular product as a tire-

[1] Bureau of Standards Circular No. 320.

sealing material, as the test can be duplicated with the simplest type of compound. Materials such as those described above are often used in boilers and heating systems to repair small leaks, and work very satisfactorily where the parts are stationary. In a tire, however, which is subject to continuous flexing while running, the question of a permanent seal is the important thing. In this respect some of the compounds are doubtless much superior to others.

Assuming that satisfactory puncture-sealing materials of the class mentioned can be obtained, the arguments which have been advanced for and against their use should be given consideration. These arguments are as follows:

(1) They will prevent delays due to relatively small punctures.
(2) They stop holes in porous tubes.
(3) They are said to prevent the escape of air through leaky valves.
(4) They keep tires cooler.
(5) They preserve the rubber.

In the opinion of the Bureau of Standards not all of these arguments are well-founded. It is questionable whether the escape of air through leaky valves would be prevented, or whether the tires would be kept cooler or the rubber preserved. The first two arguments appear to have more merit than the the others.

Arguments against the use of puncture-sealing compounds have been advanced as follows:

(1) They are not worth the cost and trouble because, with the good roads of today, tires receive comparatively few punctures of the class that would be sealed.
(2) In case of blow-outs or large punctures they make considerable mess.
(3) They may freeze in winter.
(4) They cause patches on tubes to loosen.
(5) It is inconvenient always to inflate the tire with the valve at the top as recommended by the makers of some of the compounds.
(6) In case of a nail in a tire, the motorist should know it and remove it before it damages the casing.
(7) At high speeds the wheel may be thrown off balance because of the bulk of the material being collected at one place.

Like the claims in favor of the compounds, certain of these objections seem to be weak. Freezing can be prevented by proper non-freezing agents, and there is no reason why the compounds should loosen a patch that has been properly applied. It would appear that centrifugal force would distribute the compound within the tube and hence keep it from throwing the tire off balance.

In reply to the questions which are most commonly asked about puncture-sealing compounds, the Bureau of Standards offers the following answers:

Compounds of the class discussed in this article are not injurious to the tube or casing. Seals in small holes may be fairly permanent but there is no cementing of the rubber and the seal may be dislodged when the tube is removed from the casing. Leakage of the compound into the casing may rust the rim but should not be injurious otherwise. The compounds do not appear to have interferred seriously with the functioning of the valve. There is no danger of corrosion of the valve parts since they are brass. It has not been observed that the compounds cause tubes to stick to the casings. They do not appear seriously to affect the resiliency of the tire since they occupy no more than 5 or 6% of the air space. The effective life of the compounds is unknown and would be found to vary; it would depend in many cases on the rate of evaporation.

While the Bureau of Standards has reviewed the field of puncture-sealing compounds for the benefit of anyone considering their use, it offers no recommendations as to their desirability. It may be significant, the Bureau states in conclusion, that in spite of the large number of compounds which have been produced in the past thirty years, none has come into very general use.

Machine Records Cushioning Quality of Tires

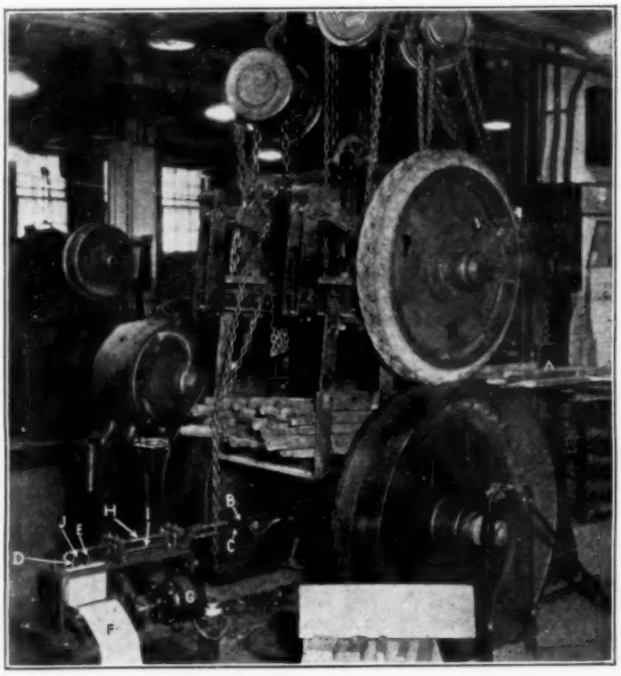
Goodyear Engineers Describe Recently-Devised Bounce-Recorder

WRITING in the March issue of the *Journal of the Society of Automotive Engineers*, J. F. Purdy and R. B. Day, of the research laboratory of the Goodyear Tire & Rubber Co., Akron, tell of a machine which has been devised to measure the cushioning ability of tires. The machine, called a bounce-recorder, records the paths followed by tires in passing over obstacles placed in their way. The vertical acceleration of a tire at any point of its flight may be determined by means of these records.

The device is shown in the accompanying illustration. The tire is mounted on a heavy steel wheel and rests on the drum of the testing machine. Behind the tire, as may be seen in the illustration is a chute, A, from which any desired obstacle can be sent under the tire. The obstacle is caught in a canvas hammock which can be stretched over the bounce-recorder in the left foreground.

Two small wire cables, B and C, are shown running to the two pencil-arms, D and E, of the recorder. One of these cables is attached to the axle at the inside of the hub and the other to the load. The cables transmit only vertical motions of the axle or load. The wheel at the far end of the axle is suspended by a chain, therefore its hub is a center about which the other wheel and the axle rotate slightly as the obstacle passes under the tire.

Vertical movements of the tire or of the load are transmitted through the cables, B and C, to the copper pointed pencils, D and E, and are recorded by a strip of indicator paper, F. The paper is drawn under the pencils at a constant speed by the motor, G. Helical springs, H and I, keep the cables under tension at all times. A stationery pencil, J, traces a base-line on the moving paper from which ordinates of the record curves can be measured without regard to slight motions of the paper from one side of the guide-rolls to the other. A fourth pencil, not shown in the photograph, which is operated by a cable extending to a cam on the main motor-shaft, makes a mark on the paper at every revolution of the motor, thus checking the constancy of the speed of the paper.



VIEW OF TESTING-MACHINE AND BOUNCE-RECORDER

A Solid Tire Is Mounted on a Heavy Steel Wheel and Rests on the Drum of the Testing-Machine. Behind the Tire and on a Level with the Top of the Drum Is a Chute from Which Any Desired Obstacle Can Be sent under the Tire. The Obstacle Is Caught in a Canvas Hammock Stretched over the Bounce-Recorder in the Left Foreground. The Hammock Is Not Shown.

RECLAIMED RUBBER

[*A Series of Articles on Its History Development - Manufacture - Uses*]

BY
C. E. Bishop
Consulting Engineer
on Reclaimed Rubber

PART II.

Continuity of Flow in Rubber Reclaiming

Proper Arrangement of Modern Equipment is Important Factor in Economical Production of Reclaimed Rubber

IN THE previous article[1] it was stated that the first important step to be considered in improving the methods of manufacturing reclaimed rubber was the proper segregation of the different kinds of scrap rubber, according to their physical natures, as they are incorporated in the scrap available today. Having so separated and classified these materials by the use of modern machines that have been developed for debeading, stripping and splitting, all of the parts are baled for economical storing and handling. The bales are delivered to the grinding machines in quantities equivalent to a complete charge for a devulcanizer, and in accordance with a predetermined material formula.

Grinding of the scrap is accomplished by feeding the material through machines of the right type so that a finely divided and uniform product is obtained. Every provision must be made to remove *tramp metal* before feeding the scrap into the grinders. There is a surpising amount of metal, such as nails, small bolts, tacks, etc. embedded in the rubber. This is particularly true in the case of solid tires and the heavy treads of pneumatics, the metal having been picked up by the tires in service.

With the charge completely ground to a uniform fineness, it is next subjected to the first part of the chemical process which is designed to remove the free sulphur and some of the vulcanizing accelerators that are present in the rubber. When the desulphurizing has been completed, a further and different chemical treatment is given to properly plasticize the rubber, or rather to subject it to the action of some agent that will (when the rubber is washed and dried) facilitate plasticizing by the mechanical means at the command of those skilled in the art.

The important factors enumerated below are to be considered in relation to the desulphurizing, devulcanizing and defiberizing, the latter being accomplished at the same time the rubber is being devulcanized. The reader must bear in mind that all these factors are based upon the fundamental principle that the entire process is designed to manufacture reclaimed rubber of the right quality, in the right quantity, at a minimum cost, and with the predominant desire so to control the entire process that the physical and chemical characteristics of the product will be uniform, charge after charge, and day after day.

FIRST: The machines to be used for the grinding operation must be of the right design and construction to insure the lowest power consumption and cost of maintenance consistent with the fineness and quantity required. Furthermore, the machines must be laid out and installed so as to require a mininum amount of labor for their operation. The object is to obtain a continuity of flow through the entire grinding system requiring only the attention of an operator to maintain adjustments, and of a mechanic or millwright to replace worn parts at periodic intervals.

SECOND: The digestors, better known to the trade as devulcanizers, must next be decided upon as to design, construction and layout, with the following features all properly co-ordinated:

1. They must be constructed for pressures required in the process, and in accordance with the A.S.M.E. Code.

2. The internal agitating mechanism must be of right design to insure homogeneous mixing during devulcanizing time, and must be driven by a motor and gear reduction unit at the right speed, with automatic control, protecting the entire mechanism by overload relay and no voltage release.

3. These machines must be fitted with piping, valves and fittings designed for automatic control, providing for setting a clock, which determines time the steam is turned on and off, at the same time blowing off jacket pressure and releasing of internal pressure, the latter varying in accordance with the agents used for assisting plasticizing. Where oils that must be distilled off are used, provision must be made for blowing off to condensers.

4. Devulcanizers must be installed so as to be easily charged and discharged and protected. That is, their efficiency must be increased by providing a charge of material and solution ready to be charged into them, and a receptacle to receive the material and solution to be discharged from them, all in accordance with a process schedule predetermined and proven practical in large scale production.

The receiving magazine provides a storage ahead of the washing operation. This insures a continuity of flow through all the succeeding operations up to and including the finished refined batch, and the flow can be controlled as to quantity by automatic feeders. All the while the charge is kept in a homogeneously mixed condition. Due to this feature uniformity is obtained, for only by such a method is it possible to prevent segregation of materials of varying specific gravity and insure the complete elimination of the devulcanizing agent, which at best is a poor accelerator, and when present in varying quantities (due to improper washing) is the bane of the compounder's existence.

The right type of machines and their drives being determined, as to construction and capacity, the next thing is to lay them out in such a manner that the greatest economy can be obtained in operating expense, utilizing all of the modern methods of conveying from machine to machine in order to obtain a continuity of flow.

[Concluded on the Next Page]

[1]See THE RUBBER AGE, April 10, 1927, page 31. This series of articles is copyrighted by C. E. Bishop. To be reprinted only by permission.

Continuity of Flow in Rubber Reclaiming

(*Continued from previous page*)

Each operator must be protected by a magazine or cushion of stock sufficient to insure continuous operating while the preceding machine is being adjusted or repaired when necessary.

Different kinds of conveyors are used between these operations, the most practical one having been determined in each case by experience. In the typical modern plant pneumatic conveyors are used to handle dry material in process and either belt (rubber surface) or screw conveyors for wet material. Bucket elevators have been eliminated in the latest type manufacturing unit, and wherever it is desired to remove tramp metal, the belt type conveyor is used almost exclusively as it lends itself more readily to the use of standard magnetic pulleys.

By the development of a manufacturing unit with a continuity of flow, a machine-like precision is obtained from the operators. This appeals greatly to most of them because of the skill that can be acquired and exhibited and the apparent efficiency and control that is made evident. The fact that heavy lifting, trucking and such laborious operations have been eliminated plays a large part in improving the mental attitude of the men.

It also follows naturally that when material in process is passing through the various operations in a continuous flow it tends to prevent lagging on the part of any individual operator on account of the effect it would have upon the preceding and following operators. Each must do his part in order to assure the production of the right quantity and quality of finished product, upon which the earnings of all the operators depend. There is an incentive here then, for each to help the other, and by proper coaching and assistance in emergencies, losses in production are reduced and excessive supervision is unnecessary.

There are, of course, manufacturing processes wherein there are many more operations involved than in this Bishoprocess of reclaiming rubber. In such cases operations are so grouped that the earnings of the operators can be judiciously based upon one basic or primary operation, thus making this plan universally applicable in all lines of industry, where it is practical and economically advisable to revamp and rearrange machinery and equipment to obtain the objective.

In the interval before the next issue, in which reclaimed rubbers and their physical properties will be discussed, the reader should read the article written by J. M. Bierer and C. C. Davis, which is an epoch-making treatise on the subject. This article appeared in the April 10, 1926, issue of THE RUBBER AGE.

Editor's Note: *In the next article Mr. Bishop will discuss the many reclaiming processes that have been patented and some that were never patented, with their merits and shortcomings in respect to the reclaiming industry of today and tomorrow.*

Commercial Aspects of Electrodeposition

(*Continued from Page* 80)

together must flux and adhere, shrinkage must be controlled especially in hard rubber; trapped air must be eliminated. Variations in the mixed or calendered material that is placed in molds results at times in poor flow and incompletely formed articles, in flow surfaces that do not adhere, in improper shrinkage, or sometimes in trapped air on the surface or in the structure.

While it is not assumed that the anode process will be found free from all difficulties of operation, it is rather definitely indicated that the structure of the deposit is more uniform than that of mill-mixed stock. It is possible to handle powerful accelerators without danger of scorching. Rubber can be deposited by the current to definite thickness. The surface of the deposit accurately duplicates the surface of the form on which the deposit is made, the outer surface is smooth, and the deposit, when properly dried and then cured, is absolutely without porosity. In general, many of the process defects that are now encountered are eliminated by the newer process, and, as yet, no serious difficulties in handling have been indicated. No vulcanized waste occurs such as now prevails in most molding processes.

We have good reason to believe that in some instances fabric may be cut to shape and only portions that are to be used may be rubberized without distortion of the fabric. The salvage value of fabric is, therefore, enhanced and the rubber material now included with the fabric in the cut waste entirely eliminated.

The anode process will be applicable to the various processes of the present rubber factory. The making of continuous sheet, or electrophoretic calendering, if you will, is feasible; the formings of continuous tubes in long lengths, though more difficult, seems capable of attainment, if required; the impregnation of fabric with rubber throughout its structure, or part way through, or on one surface only, has already been secured on a laboratory scale. The coating of metal surfaces with a tightly adhering coat of rubber is not merely a dream; experiments indicate that it will be a practicable reality. The forming of rubber articles of various shapes, either of even wall-thickness throughout or of varied thickness in different parts of the same structure, has already been performed. Where extremely thin coats of rubber are desired this process seems to offer the best method of production of any yet suggested. Sheets can be made much thinner than the thinnest that can be calendered. It seems certain that articles now made by the dipping process can be made of better quality by the anode process and more economically, principally by saving in equipment and floor space and by elimination of solvent losses.

One other advantage in the matter of applicability should be mentioned. Anyone who now requires rubber articles in small quantity as parts of other equipment or for some specific technical use cannot afford to install standard rubber-machinery for making his limited production. The smallest standard machines for carrying on the various operations have a capacity far beyond his needs and he is faced with a high installation-cost and with having his machines and motors idle much of the time. He finds that rubber manufacturers are interested mainly in large-scale production of standard articles and can supply his requirements only at a cost altogether out of proportion to his desires. We believe that many demands will arise for rubber articles that can be made economically by the anode process with relatively cheap machinery operated economically without long periods of idleness.

We have reason to believe that the anode process, then, is applicable to the production of many completely formed and finished articles and many of the partly processed materials that are now produced in the rubber industry. It probably can be applied, also, to small-scale production more easily than the smallest present standard equipment permits.

Question may be raised as to the relative merits of the anode process and other processes in which the rubber compositions are deposited from suspensions upon porous forms by suction. We do not feel it possible to make a fair comparison at this stage of the development of the two processes. Both are new and both will be improved greatly as experimental work progresses. Each will ultimately be applied to those uses for which it is eminently fitted. It appears now, however, that the anode process has undoubted advantages for certain purposes such as the production of inner tubes or the covering of metal with firmly adhering coatings.

The London Letter

The GENTLEMAN FROM MINCING LANE will report current opinion in London's famous rubber market in every issue of THE RUBBER AGE

This Week the Gentleman Talks About Deficits and Taxes

LONDON, April, 8, 1927.

A DEFICIT of £36,000,000 for Britain! The Chancellor of the Exchequer squeezed every available tax source to the limit until the financial markets were hard pressed at times supplying credit to tax-payers, and still the last £36,000,000 couldn't be found. Not that Britain isn't meeting—and more than meeting—her bills every year with the year's income. Payments on the principal of the National debt during the financial year just ended amount to £60,000,000, so that deducting the £36,000,000 deficit, there is £24,000,000 income available over and above current expenditure.

With the £14,000,000 deficit in the previous year and this item of £36,000,000, the cost of the coal troubles to the tax-payer come to £50,000,000 (or say $250,000,000); all of which brings Mr. Rubber Share-holder, rubber interests in the Lane, and tire manufacturers and users to focus their anxious thoughts on anticipating, or trying to anticipate, the way in which Mr. Churchill, the Chancellor of the Exchequer, will meet this deficit in his Budget speech on April 11th. Out of whose pocket will the £36,000,000 be lifted?

This question so completely overshadows all other rubber affairs that I have no choice but to picture the common interest on this score, as otherwise you cannot feel the full of expectancy—the holding of breath until the worst is known—in London at this time, even though you will not get this letter until after the Budget speech on the 11th instant.

So the question is, how will the deficit in last year's Budget be met? What increased taxes will be necessary during the coming year? Two possible tax increases of special concern to the rubber interests are the income tax and luxury tax. An increase in income tax would hit the rubber growers and rubber manufacturers, and at the same time, reduce the consumers' funds for the purchase of luxuries, such as automobile tires.

THEN AGAIN, American interests are specially concerned to know if the 33 1/3% import duty on automobiles and accessories will henceforth be extended to tires. I believe I wrote you some few weeks ago that the current rumor in London was to the effect that dominant interests in tire manufacture and trading were not really interested in automobile tire duties for protection. But it must be pointed out that tire duties for revenue purposes would be another story. Everyone expects increased luxury duties. Tires—on pleasure vehicles at any rate—are considered a luxury here.

As to the income-tax, up until April 1st no one expected any substantial increase, if any at all, in income-tax, but with the announcement of a £36,000,000 deficit, there was immediate concern on this score. Lloyds, who will insure you against everything, including death and taxes, immediately doubled their premium for insurance protection on the possibility of an increase in income-tax (from 10% to 20%).

Dunlop's success in 1926 is quite extraordinary, particularly in face of the fact that for seven months their British plants were running only 3 to 4 days a week, and even at this reduced level had to pay £100,000 more for coal and power. Nevertheless, the gross trading profit was £2,700,000 sterling in 1926, as compared with £3,200,000 in 1925. The profits of the Mackintosh subsidiaries are not included in 1926 figures. Estimating these at £250,000, and adding the loss of £100,000 on coal, and making other incidental allowances pertinent to the accounts, 1926 profits would compare very favourably with those of 1925. Then again, the position of the Dunlop plant in the U. S. is declared to be highly satisfactory, and shows a profit for the first time.

SINCE THE turning of the year (January 1st) Dunlop factories in this country have been running under pressure on accrued orders. The company's rubber estates also show a larger amount of rubber supplied since the considerable re-organization recently effected in the East. The total area in bearing is 45,800 acres.

Since Dunlop's losses of £7,000,000 sterling in the slump of 1921, and the subsequent re-organization of the Company under Sir. Eric Geddes and Sir George Beharrell, no more concrete proof of British ability to compete in the new world conditions could be required. If British coal, iron and steel, and ship-building concerns prove to have the same resiliency as Dunlop when their chance comes, Britain's expanding place in the sum is certainly assured.

The press is debating the possible effects on the consumption of raw rubber resulting from the formation of the Anode Rubber Company, with three Dunlop directors on the Board (this same process is also being exploited in the United States). Raw rubber producers see that there is expected to be some economy in the use of rubber in the application of this process in manufacturing. As against this possible reduction in their market, one of the London reviews gives four items which are expected to benefit rubber growers, basing this sound view on the expectation that cheaper rubber will mean an enlarged market. They are as follows:

1. Under the new process, rubber reaches the factory in its natural liquid form and it therefore dispenses with a large amount of plant, power and labour, thus reducing the cost of the finished article.
2. Production costs on the estates would be reduced as a result of delivery of output in latex form, by about 1½d per lb.
3. It is reasonable to assume that the use of reclaimed rubber would be largely eliminated.
4. Many new channels for the use of rubber should be available.

Your Faithfully,
THE GENTLEMAN FROM MINCING LANE.

Rubber Unchanged By Favorable Reports

Ample Stocks in Hands of Manufacturers Together with the Easter Holidays Exerted A Restricting Influence

NEW YORK, April 18, 1927—Crude rubber has been generally sluggish on the market for the past twelve days. The bullish element was probably disappointed by a dispatch in early April from Singapore reporting March shipments to be 41,300 tons, exceeding all estimates and boosting calculations of the probable Malayan production. The London average price was fixed at the close of business April 4 at 19.625d, an increase of .047d. New York spot rubber closed at 41 on April 4 but rose to 41⅛ the following day and kept that level generally throughout the week.

Futures had a top-heavy appearance on April 5, influenced chiefly by the March shipment figures from the Far East. July, the most active delivery, opened at 41.80c on the Exchange, ruled fairly steady up to mid-day and then declined 20 points. Rubber values improved slightly on April 6 here, but the cables indicated a very dull market in London with spot situation a trifle easier at 19 7/8d buyers.

Publication of the favorable March figures on consumption, stocks and imports compiled by the Rubber Association of America, failed to break the prolonged spell of inactivity which featured the market during the week of April 4 to 9. Spot quotations on crude rubber opened on April 11 at 41⅛ and as the week progressed declined slowly to 40⅜ on Thursday. Exchange prices on May delivery started off at 41.60c, up 40 points, but declined to 41.30 before noon on the 11th at which level it closed for a net gain of ten points.

Monday's decline (April 11) attracted considerable speculative interest to crude rubber on the following day, but the future deliveries on the exchange were not strengthened by this development. The close on the 12th was unchanged on some distant months, but 20 to 30 points lower on the active and nearer positions. The spot average price for London for the quarter was set at 19.663d. which calls for an immediate advance of the market to around 25d. for the rest of the quarter if exports are not to be cut to 60% on May 1.

The approach of the Easter holidays, during which the London markets were closed from Thursday, April 14 to Tuesday April 19, and the New York markets closed Friday and Saturday, exerted a restricting influence on crude rubber trading April 13. The local outside market was practically flat on the 14th, its prices unchanged, but steady in tone. Although spot and April standard sheets were on offer at 41c, it was said that 40 7/8c could have been done on a firm buyer's indication. The Para grades were steady here, and very steady in the primary market at Brazil. Buyers raised their ideas on Up-river fine a trifle to 32c with sellers unchanged on all grades.

APRIL 18 OPEN MARKET PRICES

Plantations—			
Ribbed Smoked Sheets			
Spot	.40¾	@	—
April	.40¾	@	—
May	.41	@	—
June	.41¼	@	—
July/September	.41⅜	@	—
October/December	.42¾	@	—
First Latex, crepe spot	.41	@	—
Amber Crepe, No. 2, spot	.38¾	@	—
" " No. 3	.38	@	—
" " No. 4	.37¾	@	—
Brown Crepe, Rolled	.35¼	@	—
" " Clean, thin	.38	@	—
" " Specky	.38	@	—
Liquid Latex, per gal.	1.50	@	1.75
Pontianac—			
Bangermassin	Nominal		
Palembang	Nominal		
Prime Pressed	Nominal		
Sarawak	Nominal		
Paras—			
Up-river Fine	.32	@	.32½
" Medium	.29	@	—
" Coarse	.24	@	—
Acre Bolivian, fine	.42	@	—
Tapajos, fine	.39	@	—
Cut Beni Bolivian, fine	.45	@	—
Caucho Ball—			
Upper, shipment	.25	@	.26
Centrals—			
Corinto, scrap	.27	@	—
Esmeraldo, sausage	.25	@	—
Guayule, *washed and dry*	.33	@	—
Africans—			
Benguela, No. 2	Nominal		
Congo, upper, black	Nominal		
" " red	Nominal		
Balata—			
Block, Columbia	.39½	@	.40½
" Cuidad	.37½	@	—
Surinam, sheet	.73	@	.75
Gutta Percha—			
Siak	.24	@	—
Red Macassar	3.00	@	—

LONDON MARKET

Standard Ribbed Smoked Sheets—*Buyers*			
Spot	20	@	20⅛d
April	20	@	20⅛
July/Sept.	20⅛	@	20⅝
Oct./Dec.	21⅛	@	21⅝
May	20	@	20⅛

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—*Sellers*			
Spot	19⅞	@	— d
April	19⅞	@	—
May/June	20⅜	@	20½
July/Sept.	20⅜	@	20⅝

RECLAIMED RUBBER

NEW YORK, April 19, 1927—Reclaimers report that their plants continue to operate close to capacity and that shipments are being made in as large a volume as during March. Competition continues to be keen, but with stocks of scrap at low ebb, quotations for reclaim have shown no decrease. Prices are relatively the same as reported in our last issue.

High Tensile Black				
Super-Reclaim No. 1	lb.	.18	@	.18½
" " No. 2	lb.	.15½	@	.16
Shoe				
Unwashed	lb.	.08¼	@	.08⅝
Washed	lb.	.11	@	.11½
Tube				
No. 1 (Floating)	lb.	.18½	@	.19½
No. 2 (Compounded)	lb.	.14½	@	.15½
High Tensile Red		.15	@	.15½
Tires				
Black, washed		.10½	@	.10¾
Black, unwashed		.08¾	@	.09
Black selected tires	lb.	.10	@	.10½
Dark Gray	lb.	.12¾	@	.13¼
Light Gray	lb.	.13½	@	.14
White	lb.	.16½	@	.17
Truck, Heavy Gravity	lb.	.08½	@	.09
" Light Gravity	lb.	.09	@	.09½
Miscellaneous				
Mechanical Bleads	lb.	.08	@	.08½
Red	lb.	.15	@	.15½

SCRAP RUBBER

NEW YORK, April 19, 1927—With rubber manufacturers and reclaimers busy, scrap dealers are still having difficulty in accumulating any stock. As soon as scrap is received and sorted it is shipped out and available supplies are said to be limited. Quotations follow:

[Prices to Consumer]

Auto tire peelings	ton	39.00	@40.00
Standard White auto	ton	57.50	@60.00
Mixed auto	ton	27.50	@28.00
Bicycle tires	ton	25.00	@26.00
Clean solid truck tires	ton	33.50	@35.00
Boots and shoes	lb.	.01⅞	@ .02
Arctics, trimmed	lb.	.01½	@ .01⅝
Arctics, untrimmed	lb.	.01¼	@ .01⅜
Inner tubes, No. 1	lb.	.08¾	@ .09
Inner tubes, No. 2, compounded		.07¼	@ .07¼
Inner Tubes Red	lb.	.06⅞	@ .07
Air Brake Hose	ton	38.00	@40.00
Rubber hose	ton	18.00	@20.00

Closing Prices on Rubber Exchange of New York, Inc.

APRIL 4 TO 18

	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	SALES*
April 4	40.80	41.30	41.40	41.70	41.90	42.10	42.30	42.40	43.00	43.30	43.50	43.70	116
5	40.80	41.10	41.40	41.60	41.80	42.00	42.20	42.20	42.80	43.10	43.30	43.50	108
6	40.80	41.30	41.40	41.80	42.00	42.30	42.50	42.50	43.00	43.30	43.50	43.70	69
7	40.90	41.30	41.60	41.80	42.00	42.40	42.60	42.50	43.30	43.30	43.50	43.70	80
8	40.90	41.30	41.60	41.90	42.10	42.50	42.60	42.60	43.00	43.30	43.50	43.70	46
9	40.80	41.20	41.50	41.80	42.00	42.10	42.50	42.80	43.20	43.50	43.70	44.00	23
11	40.90	41.30	41.50	41.80	42.10	42.40	42.60	42.80	42.90	43.30	43.50	43.80	71
12	40.70	40.80	41.30	41.50	41.80	42.10	42.30	42.60	42.80	43.10	43.30	43.60	213
13	40.50	40.60	41.10	41.50	41.70	42.00	42.30	42.50	42.80	43.00	43.20	43.50	228
14	40.50	40.70	41.20	41.60	41.80	42.00	42 20	42.50	42.80	43.00	43.20	43.50	53
15	——												
16	——												
18	40.50	40.70	41.20	41.60	42.00	42.30	42.40	42.70	43.00	43.20	43.40	43.60	10

(*) In lots of 2½ tons each; totals are for old and new contracts. (Prices are for new contracts)

THIS MONTH'S SPECIALS

1—Adamson and one Vaughn 24″x66″ Calender.
1—Allen 12″ Tuber.
2—Werner & Pfleiderer 100 gallon Mixers.
3—Royle No. 2 and No. 3 Tubers.
4—Farrel 48″ and 60″ Mills.
2—Birmingham 54″ Mills.
1—Farrel 18″x40″ 4-roll Calender.
1—Farrel 18″x48″ 3-roll Calender.
5—Birmingham 42x42″ hydraulic Presses.
6—Spreaders, various sizes.
Send for our Complete List!

We are moving!—and must

SACRIFICE all Equipment at the LOWEST PRICES in our history—

If you need any rubber equipment, get in touch with us TODAY!

UNITED RUBBER MACHINERY EXCHANGE

311-317 Mt. Pleasant Ave., Newark, N. J.

THE HARSHAW FULLER & GOODWIN CO.

1610 Hanna Bldg.—Cleveland, Ohio

CHEMICALS - COLORS - PIGMENTS

For

RUBBER MANUFACTURERS

GLYCERINE

LEAD OLEATE — LITHARGE
CHROMIUM OXIDE — RED LEAD

ANTIMONY SULPHURET

BLANC FIXE — HYDRATED LIME
CARBONATE PINE TAR — **-MAGNESIA-** — HEAVY CALCINED ROSIN OIL
"DIAMOND" — **-MICA-** — "SILVER SHEEN"

WAREHOUSES

Cleveland - New York - Philadelphia
Chicago - Elyria - Trenton

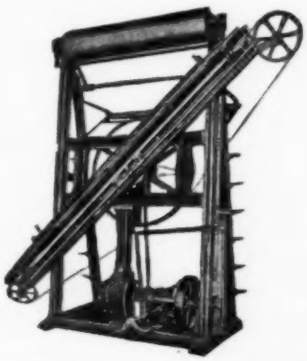
Machinery!

We Have on Hand for Prompt Shipment, Machinery and Equipment for Every Branch of the Rubber Trade. All Machines We Offer are in Guaranteed Working Condition and are on the Floors of our Three Warehouses. The Following are some of our Offerings—

24 x 66 Birmingham and Allen Calenders.
No. 1, No. 3 and No. 4 Royle Perfected Tubing Machines.
62″ Model 6, Cameron Slitting Machines.
24″ x 24″ Southwark, Vaughn and Farrel, One, Three and Four Opening Presses.
20″ x 22″ x 60″ Vaughn Mill Motor and Drive.
10′, 12′, 16′ and 25′ Hydraulic Belt Presses, Single and Double Rams.
Werner & Pfleiderer No. 12 and No. 15 Jacketed Mixers.
50 Gallon, 75 Gallon, 100 Gallon and 200 Gallon Day, Ross and American Tool Churns.

L. ALBERT & SON, INC.

Warehouses: TRENTON, N. J. — AKRON, OHIO
Offices: TRENTON, N. J. — AKRON, OHIO



The Bolton Vertical Bias Cutter

WE HAVE PERFECTED many improved devices for our Bias Cutter which simplify its operation, increase its efficiency and promote greater economy in operation.

Cuts cord or flat woven fabrics with equal ease and precisionr. Cutting range from 1-4 inch strips to 60 inch. Bias blocks on any angle from the horizontal to 45 degrees.

SPADONE MACHINE CO., INC.

15 PARK ROW — NEW YORK, N.Y.

Foreign Representatives: Francis Shaw & Co. Ltd., Bradford, Manchester, Eng.

Compounding Materials Market Is Active

Producers and Distributors Report Good Demand and High Shipments As Rubber Plants Maintain High Production Schedules in April.

NEW YORK, April 19, 1927—With reports from all centers reporting a continuation of high production schedules, manufacturers and distributors of rubber chemicals and compounding materials are well satisfied with conditions and are shipping in large quantities on spot and contract business. Accelerators, blacks, clays, zinc oxides and other staple lines are in active demand with consumption on a high level. The fine motoring weather which has ruled in all parts of the country (with a few exceptions) has tended to increase tire shipments to dealers. Stocks are by no means low but as 1927 will break all previous records for tire sales, dealers are endeavoring to keep their shelves well filled. A number of the Akron plants have continued tire production at approximately March levels and they expect this condition to continue throughout this month and part of May. Prices have shown only moderate changes. Latest quotations are:

ACCELERATORS

Organic

A-7	lb.	.70 @	—
A-40	lb.	.70 @	—
A-19	lb.	.75 @	—
A-11	lb.	.75 @	—
Aldehyde ammonia, crystals	lb.	.80 @	.82
Aniline oil, drums	lb.	.17 @	.17½
"BB"	lb.	— @	—
Captax	lb.	— @	—
Crylene	lb.	.70 @	—
paste	lb.	.50 @	—
Di-Ortho-Tolylguanidine	lb.	.85 @	.90
Diphenylguanidine	lb.	.68 @	.72
Ethylidene aniline	lb.	.60 @	.65
Excellerex	lb.	.35 @	.40
Formaldehyde Aniline	lb.	.38 @	.42
Grasselerator 102	lb.	.80 @	.82½
Grasselerator 552	lb.	4.80 @	5.00
Grasselerator 808	lb.	1.15 @	1.35
Heptene	lb.	.55 @	—
Hexamethylene-tetramine	lb.	.80 @	.82½
Lithex	lb.	.18 @	.20
Monex	lb.	3.25 @	—
Paraphenylenediamine	lb.	1.25 @	1.30
Piperidine-Piperidylthio-Carbamate	lb.	4.80 @	5.00
R & H 50	lb.	.60 @	.65
Super-Sulphur No. 1	lb.	— @	—
Super-Sulphur No. 2	lb.	— @	—
TensiPac, No 41	lb.	.65 @	.68
Thiocarbanilide, kegs	lb.	.26 @	.28½
Trimene	lb.	.75 @	—
base	lb.	1.20 @	1.35
Triphenylguanidine	lb.	.69 @	.73
Tuads	lb.	— @	—
Vulcone	lb.	.70 @	.74
Z. 88	lb.	.75 @	1.00
Zimate	lb.	— @	—

Inorganic

Lead, sublimed blue	lb.	.09 @	.09½
Lead, white	lb.	.09 @	.09½
Litharge, domestic	lb.	.12 @	.14
Magnesia, calcined, light	lb.	.06 @	.12
heavy	lb.	.04 @	.04½

COLORS

Blacks (See Compounding Materials)

Blues

Prussian	lb.	.33 @	.35
Ultramarine	lb.	.08 @	.35

Browns

Siena, Italian	lb.	.04½ @	.08
Umber, Turkey	lb.	.04½ @	.06

Greens

Chrome, light	lb.	.27 @	.31
medium	lb.	.29 @	.32
dark	lb.	.31 @	.34
Chromium Oxide, bbl.	lb.	.28 @	.32

Reds

Antimony crimson, 15/17	lb.	.27 @	—
sulphur free	lb.	.48 @	.50
golden 15/17 F.S.	lb.	.16 @	.22
Indian English	lb.	.08 @	.10
Oximony	lb.	.13¼ @	—
Para toner	lb.	.13 @	.14
Red oxide, reduced	lb.	.10 @	.11
pure	lb.	.14 @	.15
Toluidine toner	lb.	1.75 @	1.85
Venetian red	lb.	.02 @	.06
Vermillion, quicksilver, English	lb.	1.55 @	1.65

Whites

Lithopone, Akrolith	lb.	.05¾ @	.06
Lithopone, Azolith	lb.	.05¼ @	.05¾
Lithopone, Vanolith	lb.	.10½ @	—
Titanox	lb.	.12 @	.12½
Calc. Base Pigment	lb.	.10½ @	.11
Zinc Oxide—American Process			
American Azo: ZZZ (lead free)	lb.	.06½ @	.07
ZZ (under 5% leaded	lb.	.06⅝ @	.07⅛
Zinc Oxide—French Process			
White seal	lb.	.11⅝ @	—
Green seal	lb.	.10⅞ @	—
Red seal	lb.	.09¾ @	—

Yellows

Chrome	lb.	.17 @	.20
Ocher, French medium	lb.	.03 @	.03½
domestic	lb.	.01⅝ @	.02

COMPOUNDING MATERIALS

Aluminum Flake (f.o.b. plant)	ton	21.85 @	24.50
Lithate light	lb.	.16½ @	.17
Ammonia carbonate	lb.	.13½ @	.14
Arc-O Sil	ton	8.00 @	11.00
Asbestine	ton	14.75 @	18.00
Barium carbonate	ton	50.00 @	52.00
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½ @	—
Blacks			
Arrow "Aerfloted"	lb.	.08 @	.12
Bone Black	lb.	.05½ @	.11
Carbon, compressed	lb.	.07½ @	.11½
" uncompressed	lb.	.07 @	.11
Drop Black	lb.	.06 @	.10
Lamp "	lb.	.12 @	.40
Mierimex	lb.	.08 @	.12
Thermatomic carbon	lb.	— @	—
Velvetex carbon	lb.	.04 @	.07
Blanc fixe dry f.o.b. works	lb.	.04 @	—
Carrara filler	lb.	.01¾ @	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk	lb.	.02½ @	.04½
Clay, China, domestic	ton	8.00 @	9.00
Aerfloted Suprex	ton	9.00 @	20.00
Blue Ridge, Dark	ton	— @	—
" " Light	ton	— @	—
Dixie	ton	— @	—
Langford	ton	— @	—
Mineral Flour, c. l. fob mine	ton	20.00 @	23.00
Tensulite		15.00 @	—
Glues, extra white	lb.	.20 @	.29
medium white	lb.	.19 @	.25
common bone	lb.	.14 @	.15
Graphite flake, bbls.	lb.	.06½ @	.10
Magnesia, carbonate	lb.	.07 @	.09
Mica, powdered	ton	90.00 @	100.00
Rotten Stone (powdered)	lb.	.02½ @	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.30 @	3.70
Talc, domestic	ton	16.00 @	18.00
Terra Alba	cwt.	1.15 @	1.75
Tripoli, white	lb.	.01¾ @	.02
Whiting, commercial	cwt.	.85 @	1.00
English cliffstone	cwt.	1.50 @	—
Quaker	ton	— @	—
Superfine	ton	10.00 @	12.00
Sussex	ton	— @	—
Vansulite	ton	12.50 @	—
Wood pulp XXX	ton	45.00 @	—
" " X	ton	25.00 @	—

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Granulated M.R.	ton	— @	—
Hydrocarbon, Hard	ton	— @	—
Hydrocarbon, Soft	ton	— @	—
320/340 M.P. hydrocarbon (c. l. factory)	ton	47.00 @	52.00
300/310 M.P. hydrocarbon (c. l. factory)	ton	42.00 @	47.00
Paradura	ton	62.50 @	65.00
Pioneer, MR, solid	ton	41.00 @	43.00
" —granulated	ton	51.00 @	53.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	34.00 @	80.00

SOFTENERS

Acids

Nitric, 38 degrees	cwt.	5.00 @	5.25
Sulphuric, 60 degrees	ton	10.50 @	11.50
66 degrees	ton	15.00 @	16.00
Tartaric, crystals	lb.	.31½ @	—

Acids, Fatty

Stearex	lb.	.10 @	.14
Stearic, single pressed	lb.	.10 @	.11
double pressed	lb.	.11½ @	.12
triple pressed	lb.	.13½ @	.14

Alkalies

Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58% C.L.	cwt.	1.42½ @	1.45

Oils

Castor, No. 3 bbls.	lb.	.13¾ @	.14
Corn, crude, bbls.	lb.	.09¾ @	.10
refined	lb.	.11 @	—
Cottonseed, crude		.08 @	—
Cycline	gal.	.26 @	.34
Fluxrite	lb.	.05 @	.06
Glycerine, C.P. drums	lb.	.26 @	.26½
Linseed, Raw C.L. bbl.	lb.	.09½ @	.10
Moldrite	lb.	.05 @	.06
Palm Lagos	lb.	.08½ @	—
Niger	lb.	.07½ @	—
Vansulol	lb.	.10½ @	—
Peanut, domestic, crude	lb.	.11 @	—
Petrolatum, white	lb.	.08⅝ @	.09
amber	lb.	.03¾ @	.04
dark amber	lb.	.03⅜ @	.03½
Pine, steam distilled	lb.	.70 @	—
Rapeseed, refined	gal.	.82 @	.83
Rosin, first rectified	gal.	.70 @	—
second rectified	gal.	.73 @	—
Synthecite	lb.	.06 @	—

Resins and Pitches

Pitch, Burgundy	lb.	.06½ @	.07½
coal tar	gal.	.05½ @	.06
pine	bbl.	9.00 @	10.00
Rosin, grade K	bbl.	11.40 @	—
Pigmentar	gal.	.33 @	.41
Tar Retort	bbl.	15.50 @	16.00
kiln burned	bbl.	16.00 @	16.50

Solvents

Acetone, pure	lb.	.14½ @	—
Alcohol denatured, No. 1 bbls.	gal.	.37½ @	.44½
Benzol, 90%	gal.	.28 @	—
pure		.29 @	—
Carbon bisulphide	lb.	.05¼ @	.06½
Carbon tetrachloride		.06¾ @	.07½
Motor gasoline, steel bbls.	gal.	.20 @	—
Naptha, V. M. & P.	gal.	.14 @	—
Turpentine, spirits	gal.	.78 @	.79
wood	gal.	.72 @	.73

Waxes

Beeswax	lb.	.58 @	.60
Carnauba, No. 1	lb.	.57 @	.59
Ceresin, white	lb.	.13 @	.14
Montan, crude	lb.	.07 @	.07½
Ozokerite, black	lb.	.30 @	—
green	lb.	.30 @	.32

ANTI-OXIDANTS

Age-Rite	lb.	— @	—
Antox	lb.	.81 @	.83
VGB	lb.	.60 @	.66

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.10 @	.15

VULCANIZING INGREDIENTS

Ethyl Chloride, Cyl.	lb.	.34 @	—
" " Drums	lb.	.24 @	—
Sulphur Chloride (drums)	lb.	.03½ @	.06
Sulphur flour			
Superfine, bags	cwt.	2.20 @	2.80
" bbls.	cwt.	2.55 @	3.10
100% pure, refined, bags	cwt.	2.60 @	3.15
bbls.	cwt.	2.95 @	3.50

RUBBER CLAYS of the HIGHEST QUALITY

ARGOSITE CLAY

ULTRA FINE
REMARKABLY ADHESIVE
UNMATCHED PURITY

CONGAREE CLAY

EXCEEDING STANDARD
SPECIFICATIONS

UNITED CLAY MINES CORP'N TRENTON, N. J.

DIPHENYL-GUANIDINE

For reclaims and all other stocks—Dovan Diphenyl Guanidine! Lesser quantities of this accelerator are necessary, and its high test quality insures unexcelled results. This pioneer accelerator can be used in conjunction with all known compounding ingredients.

DOVAN CHEMICAL CORPORATION
30 CHURCH STREET NEW YORK CITY

DOVAN

REPRESENTED BY
J. A. Kendall, Akron, Ohio and Chicago, Ill.; J. E. Odell, Boston, Mass.; American Oil & Supply Co., Trenton, N. J.; C. A. McLarty, Toronto and Montreal; Martin, Hoyt and Milne, San Francisco and Los Angeles; Buckleton & Co., Ltd., 20 Chapel St., Liverpool, England.

Ample stocks are always carried at these points.

EMBOSSING CALENDERS

For Artificial Leather, Oil Cloth, Carriage and Automobile Covers

DRYING MACHINES

with Copper or tinned iron Cylinders for Cotton Ducks, Drills and Sheetings

The Textile-Finishing Machinery Co.
OFFICE, No. 83 EXCHANGE PLACE
PROVIDENCE, R. I.

SULPHUR
FOR THE RUBBER TRADE

"TIRE" BRAND SUPERFINE
Rubber Sulphur
"TUBE" BRAND VELVET
Rubber Sulphur

Specify "Tire" and "Tube" brands on your orders. This will assure you of Stauffer quality and service.

Stauffer Chemical Co.,
Houston Texas
San Francisco, Cal. Chauncey, N. Y.

WHITTAKER
ESTABLISHED 1890

Standard for 37 years

MINERALS - COLORS
CHEMICALS

Whittaker, Clark & Daniels, Inc.

IMPORTERS - MANUFACTURERS - EXPORTERS
245 FRONT ST. NEW YORK CITY

The CARTER BELL MFG CO

CARTER BELL
STANDARD
SINCE 1903
RUBBER SUBSTITUTES

150 Nassau Street New York

GRITLESS
RUBBER COLORS
with a reputation

THE AULT & WIBORG CO.
461 Eighth Ave., N. Y. City Cincinnati, O.
Stocks at New York and Cincinnati.

RECLAIMED RUBBERS

UNIFORM

RED
BLACK
GREY

RELIABLE

THE DEFIANCE RUBBER COMPANY

DEFIANCE, OHIO

The

GENERAL

CORD

—goes a long way to make friends

BUILT IN AKRON, OHIO, BY THE GENERAL TIRE & RUBBER CO.

SINCE 1880

Rand

GUARANTEED

RUBBER GOODS

"They Last Longer"

Reg. U. S. Patent Office

RANDPRINT APRONS

Dress Shields	Guimps and Brassieres
Rubber Sheetings	Rubber Aprons
Bunny Baby Pants	Pure Rubber Sheets
Sanitary Aprons	Rubber Bibs
Sanitary Elastic Belts	Crib Sheets
Sanitary Bloomers	Bathing Caps
Sanitary Stepins	Rubber Specialties
Powder Puff Pockets	Rubberized Sheeting
Rubber Gloves	Hot Water Bottles

RANDPRINT RUBBER

SHEET GUM cut to pattern for manufacturers.

Special Goods To Order

Made by

RAND RUBBER CO., INC.

Formerly Brooklyn Shield & Rubber Co.

Sumner Ave. & Halsey St., Brooklyn, N. Y., U. S. A.

Charles T. Wilson Co., Inc.

44 Beaver Street New York

Importers of

CRUDE RUBBER

Members Rubber Exchange of New York, Inc.

Members Rubber Exchange Clearing House, Inc.

AKRON OFFICE: 507 Second National Bldg.

Telephone Main 3799

Tire Fabrics Remain Generally Normal

Cord Fabrics Show Slight Increase Over March Quotations—
Cotton Consumption Is 60,000 Bales More than Last Year

NEW YORK, April 18, 1927—Reports of an increase in mill inventories and the opinion expressed in several quarters, that fabric mills are producing faster than should normally be the case, marked the opening of the first week in April. It was believed that this unusual activity on the part of the mills was prompted by the hope that they would be in a position to let up on summer production, should conditions call upon them to do so. During February cotton goods consumption in the tire trade totaled 13,609,241 pounds, making a total of 27,697,655 pounds since January 1.

Toward the 15th of April there were a number of commitments placed for tire fabric. Quotations on cord fabrics are quoted somewhat higher than in our last report. Prices will be found in the adjacent column.

Cotton Remains Steady

A survey of the cotton situation fails to disclose any reason for anticipating that the market will develop a decided trend in any particular direction in the near future. However, the absence of well defined incentives for trading is not unusual at this time of the year and yet, reference to past records clearly indicates that we are approaching a period during which excellent buying opportunities have almost invariably been offered.

Figures just made public by the Bureau of Census show that the cotton consumption during the month of March was nearly 60,000 bales above that of the same month in 1926. Total consumption during the month is placed at 694,193 bales. Stocks on hand March 31 were considerably higher than the year previous, both in consuming establishments and in public storage and at compresses.

Cotton exports continue to grow. The Census Bureau reports exports during the month of March totaling 1,129,537 bales against 519,732 bales exported a year ago. The eight month's total is 8,829,000 compared with 6,506,362 bales over the corresponding period of 1926.

During the first part of this month cotton was extremely quiet and at this writing there seems to be no indication of a radical change in any direction. Middling upland grade spot in the New York market has slowly advanced to fifteen points since the 5th of the month. In the week of the 11th it remained steady at 14.50. To-day's spot closing was 14.65.

There are indications throughout the South that a smaller acreage of cotton will be grown in the current season and that prices next year may be stronger as a result. The low prices in recent months have had their effect on the plans of the cotton growers and weather conditions have also contributed to cutting the acreage.

Since prices sagged after the big 1926 crop the advocates of diversified agriculture in the South have redoubled their efforts, and it is likely that they will meet with more favorable reaction this year than for some time past.

Sheetings

Sheetings were generally quiet in the first week of April. On April 9 the sharpest decline over several weeks took place on spot 40-inch 2.85-yard sheetings, which went off 1½c. Toward April 15 sheeting sales were confined to small size lots with quotations remaining steady.

Ducks

The cotton duck situation has remained generally quiet during the first two weeks in April. A number of small commitments, the usual sort of business received by the mills, and a dependable market for double filling duck has marked the activity in this line for the past 14 days. There has been little incentive to change quotations in view of the limited amount of selling which is being done. A number of jobbers found their business shaping up better at the close of the week, their sales including various constructions in filling and enameling duck.

Current COTTON and FABRIC *Quotations*

COTTON CLOSING PRICES

	High	Low	Apr. 18 Close	April 4 Close
May	14.39	14.23	14.33-34	13.99@14.00
July	14.63	14.47	14.56-57	14.20@14.21
Oct.	14.89	14.77	14.83-84	14.42@14.43
Dec.	15.07	14.95	15.01-02	14.60@14.61
Jan.	15.13	15.00	15.07	14.64@14.65
March	15.30	15.16	15.25	

The local market for spot cotton was quiet, 15 points advance, 14.65c for middling upland.

TIRE FABRICS

CORD			
Peeler, carded, 23/5/3	lb.	.37 @	.37½
Peeler, carded, 23/4/3	lb.	.37½ @	.38½
Peeler, carded, 13/3/3	lb.	.34 @	.34½
Peeler, carded, 15/3/3	lb.	.34½ @	.35½
Egyptian, carded, 23/5/3	lb.	.44 @	.45
Egyptian, combed, 23/5/3	lb.	.48 @	.49
CHAFERS			
Carded American, 8 oz.	lb.	.34 @	.34½
Carded American, 10 oz.	lb.	.35½ @	.36½
Carded American, 12 oz.	lb.	.36 @	.36½
Carded American, 14 oz.	lb.	.36½ @	37
LENO BREAKER			
Carded American, 8¼ oz.	lb.	.35 @	.35½
Carded American, 10¼ oz.	lb.	.36½ @	.37
SQUARE WOVEN			
Carded American, 17¼ oz. 13-11 ply	lb.	.36½ @	.37½
Carded American, 17¼ oz. 10-5 ply	lb.	.34 @	.34½

SHEETINGS

40-inch 2.50-yard	yd.	.10¾ @	.11
40-inch 2.85-yard	yd.	.09½ @	.09¾
40-inch 3.15-yard	yd.	.10½ @	.10⅝
40-inch 3.60-yard	yd.	.08¾ @	.09
40-inch 3.75-yard	yd.	.07¾ @	.08
40-inch 4.25-yard	yd.	.06⅞ @	.07

DUCKS

Belting and Hose	lb.	.29 @	.30
Enameling	lb.	.30 @	.34
Sloe Ducks	lb.	.29½ @	.33½
Single filling	lb.	.12 @	.15
Double filling	lb.	.14½ @	.16

NEW ENGLAND SOUTHERN MILLS

MANUFACTURERS OF TIRE FABRICS

This group of Mills is thoroughly equipped to produce coarse builders, breakers and chafers in all grades of cotton, in yarn numbers ranging from 4's to 30's in order to meet the demand for coarser yarns and lower cost fabrics.

LAWRENCE & CO., SELLING AGENTS

89 Franklin St., Boston **24 Thomas St., New York**

AKRON-WILLIAMS A-W "PRODUCTS"

Heater Presses
Molds and Cores
Tubing Machines

THE WILLIAMS FOUNDRY & MACHINE CO.
"In Business Since 1888"
AKRON, OHIO

Est. 1900 Inc. 1919

THE KUHLKE MACHINE CO.

Formerly Jones & Kuhlke

AUTOMOBILE TIRE MOLDS and CORES

GENERAL MACHINE WORK

Akron, Ohio

Just Published—

"SYNTHETIC RUBBER"

By S. P. SCHOTZ, D. Sc., A.R.T.C., F.I.C.
Chemist & Chemical Engineer

This new book gives a full account of the synthesis of rubber from a commercial angle, the scientific side of this subject being relegated to secondary consideration. This volume, just introduced in this country, is an excellent treatise on all phases of synthetic rubber.
144 pages — Illustrated — Price $6.00

Sent postpaid on receipt of price

Book Department
THE RUBBER AGE, 250 West 57th St., N. Y. City

ORGANIZING
CONTROLLING
RESEARCH

809 UNITED BUILDING
TEL. MAIN 4247

BUILDINGS
MACHINERY
LAYOUTS
FORMULAS

C. E. BISHOP
CONSULTING ENGINEER
AKRON, OHIO.

FORMERLY
RECLAIMING PLANT SUPT.
THE GOODYEAR T. & R. CO.
V. P. & FACTORY MGR.
THE AKRON RUBBER REC. CO.

NOW
SPECIALIZING
ON
RUBBER RECLAIMING
INDUSTRY

25 YEARS IN RUBBER

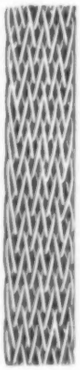
MOLDS - CORES

NON-SKID ENGRAVING MACHINES

Licensees for
Watch Case Vulcanizers
India Cores & Chucks

We specialize in the manufacture of experimental equipment for rubber factories and solicit your inquiry.

The Franz Foundry & Machine Co.
AKRON, OHIO



Perfect Beads

Entire freedom from bead trouble in the construction of straight side tires is assured by the use of either National "(Patent)" High Tensile Strength, Flat Woven, Bead Braid or our new (Pratt Patent) Bead Cables. These cables, made to dimensions specified, have seven strands, yet only one piece of wire is used without soldered, welded or brazed joint.

Write for working samples of either National flat braid or Pratt cables (no charge to tire manufacturers) and full information as to our products and service.

Our engineering department tests beads and furnishes complete confidential reports as to their stretch, set and bursting point, without charge. Inquiries solicited regarding this special service.

National Standard Company
Niles, Michigan

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, of THE RUBBER AGE published semi-monthly at Highland, New York, for April 1, 1927.

State of New York
County of New York } ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared P. L. Palmerton, who having been duly sworn according to law, deposes and says that he is the Editor of THE RUBBER AGE and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Palmerton Publishing Company, Inc., 250 W. 57th St., New York City; Editor, P. L. Palmerton, 250 W. 57th St., New York City; Managing Editor, None; Business Manager, Peter P. Pinto, 250 W. 57th St., New York City.

2. That the owner is. (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given).

Palmerton Publishing Company, Inc., 250 W. 57th St., New York City; P. L. Palmerton, 250 W. 57th St., New York City; Gardner Publishing Co., 250 W 57th St., New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are:

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

P. L. Palmerton, Editor.

Sworn to and subscribed before me this 31st day of March, 1927
[Seal] OLGA ZOLOT, Notary Public.
(My commission expires March 30, 1928.)

STATISTICAL SECTION

TIRES & TUBES
CRUDE RUBBER

AUTOMOBILES
GASOLINE

SPOT closing prices of crude rubber as indicated in the daily price tables on the next page, maintained an average of 41 and a fraction throughout the first week in April, but on the 12th declined to 41 and subsequently to 40¾, on which quotation the market closed on Friday, April 15, in observance of a holiday. The London market remained generally steady at 20 pence with a slight fractional decrease on the 13th.

The London average spot price from February 1 to April 19, inclusive was 19.670 pence. An average of 25.244 pence is necessary for the rest of the restriction quarter in order to raise the quarterly average to 21.

According to the report of the Rubber Association of America, the consumption of crude rubber in the United States during March amounted to 36,141 long tons, on a 100% basis. This is a record figure which has not been exceeded since May, 1923.

Crude rubber stocks in the United States, on hand and afloat, have touched the highest level of the past three years. March figures, compiled by the Rubber Association, and raised to a 100% basis, read 135,340 long tons. However, the amount on hand at the end of March is less than was the case at the end of February, while the amount afloat is considerably more than was afloat at the end of February.

New statistics have been added to the tables covering exports of crude rubber from principal producing countries, and imports into principal manufacturing countries.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

Table of Contents

United States Rubber Imports and Exports
Rubber Consumption in the United States
Rubber Invoiced to the United States
Daily Rubber Prices in New York
Monthly and Annual Rubber Prices
London Official Rubber Prices
Daily Cotton Prices in New York
Stocks of Crude Rubber in the U. S.
Stocks of Crude Rubber in London
Rubber in Singapore and Penang
United States Tire and Tube Statistics
Automobile Production—U. S. and Canada
Rims Inspected and Passed in the U. S.
United States Consumption of Gasoline
Rubber Exports from Producing Countries
Rubber Imports into Consuming Countries

U. S. Imports and Exports of Crude Rubber.

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1925:							
Jan.	32,898	22,406,756	30.41	1,162	963,593	37.02	31,736
Feb.	24,696	18,532,115	33.50	979	779,406	35.53	23,717
Mar.	33,072	25,146,691	33.94	1,345	1,105,119	36.69	31,727
Apr.	32,506	24,874,562	34.16	1,130	1,009,305	39.86	31,376
May	36,932	30,311,754	36.64	1,203	1,323,445	49.12	35,729
June	31,569	26,855,883	37.98	1,198	1,577,106	58.75	30,371
July	32,455	33,701,723	46.36	1,278	2,132,681	74.52	31,177
Aug.	33,412	39,834,348	53.22	1,131	1,623,258	64.08	32,281
Sept.	26,367	36,686,013	62.11	1,154	1,820,360	70.41	25,213
Oct.	34,651	50,027,338	64.45	1,132	1,969,291	78.43	33,519
Nov.	37,755	56,271,963	66.54	1,605	2,898,930	80.65	36,150
Dec.	40,329	65,055,868	72.02	1,510	2,625,259	77.61	38,819
	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926:							
Jan.	42,404	72,528,151	76.36	2,084	3,747,505	80.28	40,320
Feb.	32,865	58,733,370	79.78	1,430	2,280,168	71.17	31,435
Mar.	42,152	70,589,581	74.76	1,836	2,735,234	66.51	40,316
Apr.	34,544	48,742,539	62.99	1,128	1,605,093	63.58	33,416
May	29,756	36,896,080	55.35	1,052	1,558,987	66.17	28,704
June	24,900	34,498,561	61.85	1,105	1,371,217	55.41	23,795
July	35,820	33,061,470	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,022	39.02	1,437	1,519,870	47.20	35,675
Oct.	29,333	25,300,483	38.50	1,366	1,316,270	43.02	27,967
Nov.	38,925	34,661,631	39.97	1,482	1,320,461	*42.00	37,443
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,850
	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927:							
Jan.	43,340	36,753,719	37.99	1,526	1,444,734	42.22	41,814
Feb.	28,338	23,110,257	36.41	2,451	2,277,297	41.47	25,887
Mar.	35,172*		36.09				

*Official estimate based on arrivals at N. Y. and Boston.

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1921	1922	1923	1924	1925	1926	1927
January	5,045	16,938	30,106	29,058	29,638	32,196	31,518
February	5,955	14,767	30,149	25,736	29,761	31,136	30,137
March	3,190	21,408	36,629	28,385	33,498	32,936	36,141
April	13,084	19,294	29,085	27,129	34,139	32,696	
May	16,023	23,246	36,155	25,845	35,322	29,364	
June	16,142	31,713	24,272	22,753	35,822	28,598	
July	18,310	24,522	17,685	23,396	36,053	27,577	
August	23,649	29,361	20,359	28,982	35,909	34,533	
September	16,705	24,410	17,594	31,497	31,691	32,904	
October	16,814	26,881	21,321	31,520	29,047	29,836	
November	14,105	24,950	20,437	27,289	28,853	28,080	
December	15,482	25,070	21,902	27,199	28,748	26,293	
TOTALS	170,504	282,560	305,694	328,769	388,481	366,149	

Figures on Quarterly Basis

Quarter	1921	1922	1923	1924	1925	1926
Jan./Mar.	65,463	127,360	96,776	87,609	95,263	94,301
Apr./Jun.			89,493	75,674	104,099	87,109
Jul./Sept.	105,962	155,067	55,621	83,813	99,493	93,793
Oct./Dec.			**63,617**	**92,656**	85,789	83,212
Total	171,425	282,427	305,507	339,752	384,644	358,415

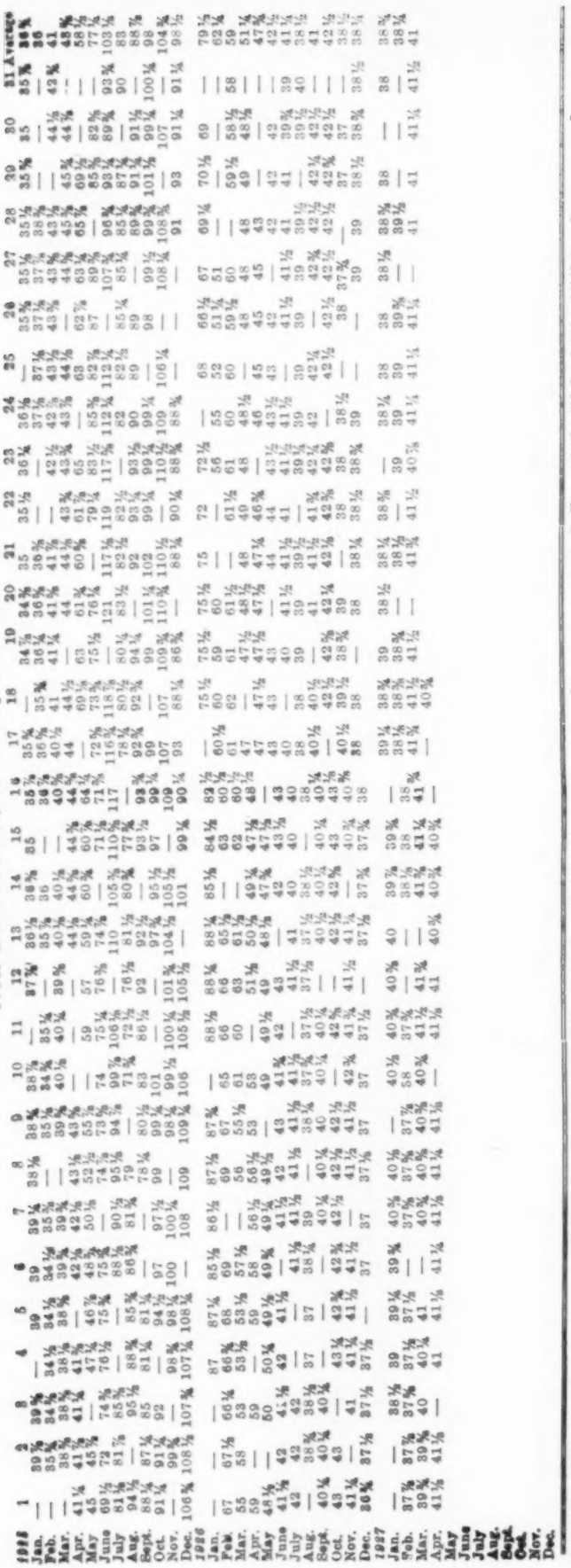
Note: The Rubber Association estimates its monthly rubber consumption figures to be 90% complete. Up until 1925 the quarterly figures were likewise estimated to be 90% complete; beginning with 1925 an estimate of 92% completeness has been used. These estimates have been used in raising the figures in this table to 100%. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
Feb. 5	3,187	1,001	1,147	150	5,485
Feb. 12	4,414	327	1,412	153	6,306
Feb. 19	4,284	835	1,209	720	7,048
Feb. 26	5,071	45	1,827	570	7,513
Mar. 5	5,759	2,091	1,536	325	9,711
Mar. 12	6,146	1,352	1,968	198	9,664
Mar. 19	6,417	908	2,026	272	9,623
Mar. 26	5,800	1,014	1,638	493	8,945
Apr. 2	4,936	582	1,568	542	7,628
Apr. 9	5,536	584	805	1,295	8,220

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*



Average Spot Closing Prices--Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	*Cents*	*Year*	*Cents*	*Years*	*Cents*
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound since 1922

Months	1922 *Cents*	1923 *Cents*	1924 *Cents*	1925 *Cents*	1926 *Cents*	1927 *Cents*
Jan.	18.82	32.73	25.86	36.71	79.50	38.75
Feb.	16.12	35.14	25.29	36.01	62.25	38.25
Mar.	14.53	34.21	22.83	41.00	59.00	41.04
Apr.	15.99	32.48	22.51	43.64	51.25	
May	15.25	27.39	19.89	58.47	47.75	
June	15.11	26.88	18.81	77.26	42.50	
July	14.67	26.10	22.16	103.16	41.03	
Aug.	13.93	28.84	26.17	82.99	38.50	
Sept.	14.44	28.95	27.56	88.88	41.00	
Oct.	19.78	26.93	31.13	98.01	42.50	
Nov.	23.88	27.14	34.33	104.80	38.50	
Dec.	27.42	26.60	37.88	98.51	38.25	
Average for Year	17.50	29.45	26.20	72.46	48.50	

London Closing Prices of Ribbed Smoked Sheet

(In pence per pound)

Fifth Restriction Year—Second Quarter

Day	*Feb.*	*March*	*April*	*Day*	*Feb.*	*March*	*April*
1	18⅞	19¾	20	16	18⅞	20⅜	—
2	18¾	19¾	20	17	19	20⅜	—
3	18⅝	19¾	—	18	19¼	20¼	
4	18¾	20	20	19	19⅜	20⅜	
5	18¾	20¼	20	20	—	—	
6	—	—	19⅞	21	19¼	20⅜	
7	18⅞	20¼	20	22	19¼	20⅜	
8	18¾	20⅛	20	23	19⅜	20⅛	
9	18⅞	20	20	24	19⅜	20	
10	18⅞	20⅛	—	25	19½	20	
11	18¾	20¼	20	26	19½	20⅛	
12	18⅞	20⅜	19⅞	27	—	—	
13	—	—	19¾	28	19⅝	20⅛	
14	19	20¼	20	29	—	20	
15	19	20¼	—	30	—	20⅛	
				31	—	20	

(The average price for the period for which daily prices are reported above is approximately 19.670 pence. The British Colonial Secretary has announced that only 60% of the standard production will be exportable from the restricted area during the next quarter if the price during the entire current quarter does not average at least 21 pence.)

Average Price in Previous Quarters

Quarter	1922-23	1923-24	1924-25	1925-26	1926-27
Nov.-Jan.	14.285	14.175	17.9983	46.709	19.265
Feb.-Apr.	16.858	12.917	19.356	28.103	
May-June	14.242	10.974	38.469	21.001	
Aug.-Oct.	14.944	14.632	43.269	20.199	

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	*April Cents*	*March*	*Day of Month*	*April*	*March*	*Day of Month*	*April Cents*	*March*
1	14.40	14.85	11	14.40	14.20	21		14.40
2	14.35	14.70	12	14.50	14.10	22		14.15
3	——	14.65	13	14.50	——	23		14.25
4	14.30	14.50	14	14.50	14.00	24		14.30
5	14.35	14.50	15	14.50	14.05	25		14.30
6	14.45	——	16	——	14.05	26		14.40
7	14.40	14.50	17	——	14.00	27		——
8	14.45	14.45	18	14.65	14.00	28		14.40
9	14.45	14.25	19		14.20	29		14.55
10	——	14.25	20		——	30		14.35
						31		14.45

Average Monthly Price Per Pound

Month	1925 *Cents*	1926 *Cents*	1927 *Cents*	*Month*	1925 *Cents*	1926 *Cents*	1927 *Cents*
Jan.	23.99	20.85	13.42	Aug.	23.72	18.57	
Feb.	24.70	20.60	14.10	Sept.	23.79	17.02	
Mar.	25.64	19.35	14.32	Oct.	21.77	13.14	
Apr.	24.54	19.13		Nov.	20.94	13.86	
May	23.41	18.92		Dec.	20.06	13.68	
June	24.13	18.57		Average			
July	24.68	18.71		for Year	23.45	17.53	

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At	ON HAND			AFLOAT			AND AFLOAT ON HAND		
End of	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	60,870	55,198	76,172	36,759	46,296	45,312	97,629	100,434	121,484
Feb.	54,109	58,035	91,186	41,475	46,935	42,166	95,584	104,970	133,352
Mar.	52,494	61,822	85,740	40,577	43,567	49,600	93,071	105,389	135,340
Apr.	50,143	55,261		53,465	41,905		103,608	97,166	
May	52,064	64,360		46,846	40,303		98,910	104,663	
June	50,997	60,460		51,202	40,907		102,199	101,367	
July	46,245	64,900		46,003	38,062		92,248	102,962	
Aug.	42,354	60,870		41,254	37,360		83,608	98,230	
Sept.	36,367	62,078		55,151	42,464		91,518	105,542	
Oct.	34,085	64,989		51,098	52,930		85,183	117,919	
Nov.	34,885	69,385		42,692	47,311		86,577	116,696	
Dec.	51,215	72,520		48,208	52,020		99,423	124,540	

(Rubber Association of America figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At End of:	1920	1921	1922	1923	1924	1925	1926
January	19,300	56,573	67,252	73,498	57,460	27,172	9,994
February	18,329	59,439	67,623	70,483	56,732	23,425	10,004
March	18,969	63,913	66,670	63,438	55,647	18,104	13,750
April	20,072	68,759	68,637	58,770	54,559	12,949	18,951
May	20,921	70,403	70,146	54,439	51,615	5,895	20,896
June	22,517	69,408	71,597	51,050	51,115	5,318	23,894
July	25,346	71,065	71,515	49,937	52,073	4,258	27,727
August	30,674	73,211	72,112	48,427	49,700	4,619	30,764
September	35,504	72,175	70,977	54,523	44,011	5,453	35,077
October	41,743	69,229	68,536	58,891	37,523	5,086	42,141
November	45,550	70,786	68,548	60,074	33,593	3,869	44,057
December	50,652	69,792	72,299	60,246	29,488	5,697	48,921

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1926					
August	27,972	29,313	29,678	30,159	——
September	30,764	32,011	33,249	34,587	——
October	36,065	37,226	39,650	41,080	42,141
November	43,045	43,299	44,553	43,859	——
December	44,395	46,349	47,324	48,382	——
1927					
January	48,948	50,756	52,484	53,662	54,786
February	55,740	56,939	56,962	58,659	——
March	59,945	61,516	61,300	63,167	——
April	62,634	63,861	65,033		

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1925	1926	1927	*End of*	1925	1926	1927
Jan.	15,925	15,726	25,440	July	15,894	23,101	
Feb.	17,320	13,653	26,766	Aug.	17,251	23,362	
Mar.	17,261	18,389		Sept.	16,526	25,997	
Apr.	15,368	16,328		Oct.	15,346	26,614	
May	15,804	16,967		Nov.	19,788	25,486	
June	15,884	19,416		Dec.	18,840	26,443	

Rims Inspected and Passed in U. S.

(Tire & Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1925	25,997,849	66.8
1924	21,863,720	19.7	1926	24,199,613	78.8
1926			1927		
July	2,123,368	84.8	January	1,489,078	77.0
August	2,378,850	82.3	February	1,753,224	84.4
September	2,365,518	80.7	March	2,071,989	85.1
October	1,828,539	76.9	April		
November	1,210,472	77.0	May		
December	1,096,429	76.7	June		

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1924	1925	1926	1927
January	11,918,000	14,386,000	17,582,000	17,888,000
February	9,626,000	13,210,000	15,814,000	18,240,000
March	10,961,000	14,890,000	19,302,000	
April	14,583,000	19,013,000	20,848,000	
May	15,889,000	20,459,000	24,213,000	
June	16,421,000	20,724,000	23,803,000	
July	18,610,000	22,879,000	24,752,000	
August	19,825,000	22,323,000	26,912,000	
September	16,871,000	20,177,000	22,929,000	
October	18,029,000	19,826,000	23,973,000	
November	16,607,000	18,024,000	20,618,000	
December	15,663,000	17,954,000	21,419,000	
TOTAL	185,003,000	223,865,000	262,165,000	

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	40,932	45,259	51,633	60,845	61,237
Shipments	39,987	45,204	50,120	59,262	59,002
Inventory[2]	6,132	5,772	7,427	8,142	10,456

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	4,740	4,587	4,965	4,013	2,974	4,932	7,949	9,947	10,432
Feb.	4,908	4,865	5,095	3,924	3,436	4,458	8,928	11,164	11,075
Mar.	5,276	5,456		4,657	4,561		9,510	12,004	
Apr.	5,341	5,346		5,498	4,980		9,088	12,461	
May	5,467	5,023		5,954	5,211		8,611	12,343	
June	5,418	5,422		6,737	5,724		7,243	11,968	
July	5,587	4,950		6,298	6,337		6,421	10,592	
Aug.	5,607	5,872		4,760	6,744		7,261	9,732	
Sept.	5,007	5,706		4,569	6,040		7,681	9,318	
Oct.	4,505	5,103		5,580	4,544		6,670	9,917	
Nov.	4,229	4,324		3,671	3,733		6,955	10,297	
Dec.	4,760	4,683		3,601	4,718		8,142	10,456	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	50,850	60,116	70,706	82,614	76,618
Shipments	49,673	59,072	68,016	81,004	71,591
Inventory[2]	7,643	8,425	11,052	11,313	16,200

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	6,343	6,809	5,337	5,576	3,723	6,016	11,570	14,361	15,585
Feb.	6,339	6,825	5,658	4,971	3,736	5,120	13,023	17,090	16,075
Mar.	7,000	7,030		5,711	4,987		14,236	19,191	
Apr.	6,851	6,554		6,704	5,051		13,618	20,674	
May	6,846	6,149		8,040	6,304		12,501	21,141	
June	6,942	6,171		9,032	6,898		10,409	20,243	
July	7,544	5,729		9,140	8,569		8,635	17,267	
Aug.	7,618	7,424		6,923	9,579		9,271	15,462	
Sept.	7,254	7,590		6,665	7,762		9,950	15,312	
Oct.	6,612	6,208		7,845	5,474		8,726	15,929	
Nov.	6,266	4,852		5,406	4,045		9,491	16,604	
Dec.	6,999	5,277		4,991	5,463		11,318	16,200	

(1) Rubber Association of America figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	Passenger Cars			Trucks		
	Total	United States	Canada	Total	United States	Canada
1920	1,883,158	1,799,522	83,636	322,039	311,531	10,508
1921	1,514,000	1,452,902	61,098	147,550	142,402	5,148
1922	2,397,827	2,302,923	94,904	251,434	244,285	7,149
1923	3,719,164	3,589,936	129,228	378,288	361,078	17,210
1924	3,262,764	3,144,999	117,765	378,106	360,625	17,481
1925	3,817,639	3,678,328	139,311	498,019	475,941	22,078
1926						
January	284,703	272,922	11,781	33,461	29,763	3,698
February	334,524	319,763	14,761	41,685	37,608	4,077
March	399,105	381,116	17,989	49,233	44,848	4,385
April	401,836	383,907	17,929	53,887	50,314	3,573
May	394,569	373,140	21,429	51,343	47,838	3,505
June	358,360	339,542	18,818	47,043	44,110	2,933
July	328,816	315,863	12,953	41,847	39,592	2,255
August	393,040	380,258	12,782	47,907	45,404	2,503
September	363,537	350,913	12,624	51,299	46,428	4,871
October	300,142	289,547	10,595	46,965	42,890	4,075
November	226,278	219,504	6,774	39,410	36,356	3,054
December	143,413	137,361	6,052	30,002	28,302	1,700
TOTAL	3,928,323	3,766,336	161,487	534,082	493,458	40,629
1927						
January	208,718	196,973	11,745	40,800	37,169	3,631
February	275,156	260,330	14,826	41,858	38,029	3,829
March						
April						
May						
June						
July						
August						
September						
October						
November						
December						

Exports of Crude Rubber from Principal Producing Countries

(Figures in Long Tons)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[5]				Fr.			
	Gross Exports	Gross Exports minus Imports	Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley[6]	All Other[6]	World Total[7]
1923	252,016	70,432	181,584	37,112	6,416	5,705	4,237	1,718	32,938	48,402	43,422	5,606	19,127	7,856	404,123
1924	259,706	108,524	151,182	37,351	7,697	6,699	4,621	2,962	42,446	53,483	80,347	6,688	22,906	9,065	425,447
1925	316,825	158,022	158,803	45,684	10,082	8,413	5,424	5,394	46,643	62,678	119,271	7,881	24,079	13,797	508,149
1926:															
Jan.	30,452	10,237	20,215	4,058	1,273	416	472	289	4,397	6,277	8,081	915	1,697	1,805	49,895
Feb.	30,440	8,306	22,134	4,941	725	488	450	253	4,474	5,734	6,801	554	2,169	1,978	50,701
Mar.	35,012	14,800	20,212	5,708	1,113	792	561	418	4,865	5,612	11,880	573	2,395	1,899	56,028
Apr.	23,727	10,565	13,162	3,484	590	679	374	293	4,522	4,598	6,208	410	1,778	1,529	37,627
May	31,231	10,604	20,627	3,600	691	927	410	279	4,742	5,293	8,606	502	2,144	1,464	49,285
June	30,624	11,764	18,860	3,906	452	779	512	275	5,440	6,111	9,844	549	1,367	1,279	49,374
July	28,824	15,280	13,544	4,800	938	911	420*	439	4,929	5,522	12,864	1,521	1,246	1,148	48,282*
Aug.	34,625	13,595	21,030	5,246	521	890	420*	316	4,418	3,472	10,349	378	1,411	1,097	49,548*
Sept.	35,913	13,972	21,941	6,027	652	888	420*	457	4,326	6,757	10,971	681	1,463	822	55,405*
Oct.	39,367	15,203	24,164	6,026	635	805	420*	385	4,193	6,988	11,513	661	1,616	1,023	58,429*
Nov.	34,302	12,201	22,101	4,687	1,111	685	420*	285	4,060	5,746	8,998	718	1,780	1,259	51,850*
Dec.	36,811	14,716	22,095	6,361	1,177	895	420*	338	5,025	7,106	12,333	790	2,492	714	59,746*
	391,328	151,243	240,085	58,844	9,878	9,155	5,299*	4,027	55,391	69,216	118,448	8,252	21,558	16,017	616,170*
1927:															
Jan.	34,946	14,995	19,951	6,697	922	950		264	4,184	6,705	10,541	941			
Feb.	27,528	11,607	15,921	3,571		522		360	4,707	6,526	10,634	675			
Mar.	41,346	17,464	23,884									733			
Apr.															
May															
June															
July															
Aug.															
Sept.															
Oct.															
Nov.															
Dec.															

(1) Malayan net exports cannot be taken as production since imported rubber is largely wet native rubber which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, and 3,263 in 1926. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, and about 20 tons in 1926. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, and about 60 tons in 1926. In 1926, 196 tons of latex sprayed rubber and 125 tons of ficus rubber were exported from Java and Madura. (6) Calculated from official import statistics of principal consuming countries; viz., United States, United Kingdom, France, Germany, Italy, Belgium, and Netherlands. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States	United Kingdom	France (abd)	Germany	Canada (ac)	Japan (ac)	Italy	Russia (ce)	Australia (cf)	Belgium (d)	Netherlands	Sweden (abcd)	Norway (abc)	Denmark (abd)
1919	236,977	42,671	19,951	5,584	8,770	10,688	5,791	75	733	3,995	2,771	2,022	437	673
1920	248,762	56,841	15,868	11,893	11,912	6,015	6,123	62	1,040	3,840	5,510	1,567	241	479
1921	179,678	42,087	16,981	21,929	8,248	22,981	3,936	165	551	1,705	1,022	813	178	251
1922	296,267	11,724	27,641	27,546	9,366	16,449	6,130	2,453	2,649	172	-3,807	1,248	321	87
1923	300,372	12,700	31,067	18,519	13,299	17,181	8,489	4,506	1,631	2,184	792	1,391	448	354
1924	317,747	-11,550	34,488	22,727	11,420	19,612	8,764	824	3,127	2,688	-807	1,781	669	473
1925	**381,815**	**4,061**	**36,911**	**33,937**	**19,825**	**12,743**	**11,412**	**7,088**	**4,217**	**2,930**	**875**	**1,690**	**701**	**440**
1925:														
January	31,736	-284	2,147	4,303	1,432	797	552	333	192	331	109	164	64	16
February	23,717	-2,492	3,529	3,690	1,278	658	908	1,000	338	275	88	136	145	37
March	31,727	-3,396	3,924	2,784	2,319	689	1,163	1,083	357	373	56	183	77	71
April	31,376	-2,961	3,069	3,574	1,397	719	817	535	314	97	181	149	47	22
May	35,729	-8,650	3,223	3,834	1,532	863	1,060	1,999	385	228	47	126	47	16
June	30,371	619	2,387	3,219	1,681	2,095	1,506	59	378	329	120	97	43	74
August	32,281	3,825	1,109	2,942	1,582	786	650	16	311	176	28	114	45	24
July	31,177	2,204	1,827	2,606	1,613	813	631	85	297	169	76	119	53	35
September	25,213	5,369	4,633	2,667	1,202	946	939	234	429	283	136	102	54	20
October	33,519	1,203	3,039	2,325	1,799	1,060	914	21	243	255	60	159	36	38
November	36,150	2,466	4,654	1,260	1,712	2,140	1,157	190	512	226	-12	219	55	52
December	38,819	6,158	3,370	713	2,248	1,187	815	1,533	431	178	-14	122	33	35
1926:														
January	40,345	6,886	3,170	703	2,188	892	760	332	358	76	154	123	46	51
February	31,435	3,114	3,513	1,113	1,881	741	1,041	643	432	143	89	171	82	94
March	40,416	8,907	4,760	1,342	2,079	894	1,037	832	269	129	227	213	31	55
Apr.	33,416	8,275	4,834	1,781	1,624	1,868	865	402	431	71	93	204	27	23
May	28,705	6,773	2,937	1,848	1,239	1,010	705	200	386	186	241	110	24	47
June	23,795	5,894	2,327	1,655	1,188	1,465	1,070	983	546	269	214	178	20	34
July	34,266	6,768	2,603	2,202	1,552	1,447	800	132	586	295	480	195	34	27
Aug	26,081	7,327	2,819	2,110	1,888	1,284	796	655	1,159	303	596	199	52	55
Sept.	35,675	8,843	2,900	2,029	1,355	1,922	819	472	1,125	283	430	159	43	27
Oct.	28,110	8,082	2,962	2,423	1,865	2,396	645	585	889	301	2	210	63	43
Nov.	37,673	9,247	3,194	3,007	1,548	3,380	832	568	802	194	-18	179	65	50
Dec.	35,850	4,740	3,341	2,562	1,846	856	439	725		248	157	184	122	69
	395,667	84,865	39,390	22,775	20,253	18,125	9,809	6,529		2,498	2,665	2,125	609	575

a—Including gutta percha. b—Including balata. c—Reexports not deducted. d—Believed to include scrap and reclaimed rubber. e—Russian statistics are exports from United Kingdom only to Russia. f—Australian annual statistics including 1924 are exports to Australia from Malaya, Ceylon, Dutch East Indies and United Kingdom; monthly figures and total for 1925 are exports from Malaya, Ceylon, and Java only. -Minus sign, reexports in excess of imports. *All statistics from original official trade returns.*

The Market Place

WHERE TO OBTAIN

Machinery, fabrics, chemicals, compounding ingredients, crude and reclaimed rubber, consulting chemical and engineering services. **1.**

ACCELERATORS—X L O and Diphenyl Guanidine.

Dovan Chemical Corp.

30 Church St. New York

ACCELERATORS

Grasselerator 102
Grasselerator 552
Grasselerator 808

Grasselli Chemical Co.

Rubber Service Dept.

347 Madison Ave., New York

ACCELERATORS

Diphenyl- and Triphenylguanidine
Para-Nitrosodimethylaniline
Thiocarbanilide

National Aniline & Chemical Company, Inc.

40 Rector St. New York City

ACCELERATORS— Every lot is tested before shipment and a written guarantee of quality furnished.

Roessler & Hasslacher Chem. Co.

709 Sixth Ave. N. Y. City

ACCELERATORS

A-7 A-11 A-16 A-19 Z-88
THIOCARBANILIDE
FORMALDEHYDE—ANILINE

The RUBBER SERVICE LABORATORIES CO.

611 Peoples Savings & Trust Bldg.
Akron, Ohio

ANTIMONY Pentasulphide, golden and crimson, very fine, pure.

Rare Metal Products Co.

Belleville, N. J.

Direct Factory Representation

Your Products Listed Here

reach buyers in rubber factories at a cost lower than is possible by any other method.

ARRANGE FOR YOUR LISTING TODAY!

ASBESTINE— Specially prepared for use in Rubber. Send for liberal working sample.

SOLE PRODUCERS

International Pulp Co.

41 Park Row, New York City

BEAD CABLES— National Flat Woven and Pratt Patent Bead Cables.

National Standard Co.

Niles, Mich.

BOLTON BIAS CUTTER

Cuts cord or flat woven fabrics with equal ease and precision. In use all over the world.

Spadone Machine Co., Inc.

15 Park Row New York

CALENDERS—Embossing, for artificial leather, oil cloth etc.

Textile-Finishing Machinery Co.

83 Exchange Place, Providence, R. I

CARBON BLACK—*Micronex* the world's standard gas black, universally known as the "King of Rubber Pigments."

Binney & Smith Co.

41 East 42nd St. New York City

CARBON BLACK

Godfrey L. Cabot, Inc.

Manufacturers for forty years.

940 Old South Bldg., Boston, Mass.
612 Metropolitan Bldg., Akron, O.

CARBON BLACK—*Aerfloted* Arrow Black for rubber compounding. Standard for grit-free uniformity.

J. M. Huber, Inc.

130 West 42nd St. New York

CATALPO — The universal and standard rubber pigment now being used in treads, solids, tubes, carcass frictions, etc.

Moore & Munger

33 Rector Street
New York City

CHEMICALS—

RUBBER COLORS—ANTI-OXIDANTS
ACCELERATORS

Di-ortho-Tolylguanidine, Diphenylguanidine. Methylene-para-toluidine; Formaldehydeaniline. Vulcanol, Thionex, Vulcone, Vulcanex

E. I. du Pont de Nemours & Co., Inc.

Wilmington, Del.

CHEMICALS — Accelerators

Trimene Base, Heptene, Monex, Crylene, Lithex, Aniline Oil.
Clay—Mineral Flour, Seminole (Georgia).
Antioxidant—VGB, a proven product.
Labels—all-rubber two color brands.

Naugatuck Chemical Co.

1790 Broadway, New York.

The Most Economical Form of Advertising

The Market Place Section of THE RUBBER AGE contains the *only* alphabetically arranged listings of small 'ads' available in the rubber industry. Your advertisement in this section will not only be easy to find, but it will produce excellent results at very moderate costs. Let us send you details.

THE MARKET PLACE Section Continued on Next Page

ALL THE LEADERS

Are represented in this section. Purchasing agents can rely on the concerns listed as thoroughly reliable in every way.

The Market Place

2.

CHEMICALS and compounding ingredients; Clay, Whiting, Accelerators, Mineral Rubber.

R. T. Vanderbilt Co.
50 East 42nd St. New York City

CONSULT BANNER
Before You Buy
TIRE BUILDING MACHINES
The Banner Machine Co.
Columbiana, Ohio
Paul A. Frank, Akron, Ohio, Agent.

DRY KILN—for drying crude rubber and chemicals—Hunter Process.
Carrier Engineering Corporation
750 Frelinghuysen Ave. Newark N. J.

CHEMICALS—Complete line of rubber compounding materials, pigments and colors.
Complete problem laboratory for your use.
Send for latest quotations
Vansul, Inc.
90 West St., New York

CONSULTING ENGINEER
Specializing on Rubber Reclaiming
Organizing — Controlling — Research.
Buildings — Machinery — Formulas.
C. E. Bishop
809 United Bldg., Akron, O.

ENGINEERS
Machinists, Iron and Steel Founders
Standard and Special
Rubber Working Machinery
The Adamson Machine Co.
Akron, Ohio

CHEMICALS and Mineral Ingredients—Whiting, Clay, Talc, Barytes, Colors, Heavy Calcined Magnesia, Carbonate of Magnesia, Pumice Stone.
Standard Since 1890
Whittaker, Clark & Daniels, Inc.
245 Front St., New York

CONSULTING
Rubber Technologist
R. R. Olin Laboratories
852 Wall Street, Akron, Ohio.

ENGINEERS & Machinists
Cores, Chucks, Power Stands, Stock Racks, Tube MOLDS, Book Type MOLDS, Special Machinery.
DeMattia Brothers, Inc.
Clifton, New Jersey

CHEMICALS and COLORS
for all classes of mixing and cure. Complete rubber laboratory service for our customers.
Wishnick-Tumpeer, Inc.
New York Chicago Cleveland Boston

CRUDE RUBBER
We Solicit Your Inquiries
H. Muehlstein & Co., Inc.
41 East 42nd. St., N. Y. City
Offices in Akron, Chicago, Boston.

FABRICS—Tire fabrics—coarse builders, chafers, breakers in all grades.
New England Southern Mills
LAWRENCE & CO.
24 Thomas St. New York
Boston, Philadelphia, Chicago, St. Louis, San Francisco

CLAYS for the rubber trade.
ARGOSITE CLAY—Pulverized—Special
CONGAREE CLAY—Pulverized—Standard
United Clay Mines Corp.
General Offices — — Trenton, N. J.

CRUDE RUBBER
Importers
Members Rubber Exchange of N. Y., Inc. and Rubber Exchange Clearing House, Inc.
Charles T. Wilson Co., Inc.
82 Beaver St., New York
AKRON OFFICE: 507 Second Nat'l. B'ldg.

FACTICE—Prevents blooming, makes colors fast and a smoother batch.
Stamford Rubber Supply Co.
Stamford, Conn.

COLORS—for the rubber trade.
Gritless, dry colors especially processed for rubber compounding.
The Ault & Wiborg Co.
451 Eighth Ave., New York
Cincinnati, Ohio

CUMAR—Paracumarone Resin
A neutral gum for rubber compounding.
Samples and prices on request.
The Barrett Company
40 Rector St., N. Y. City

GUAYULE—"Duro" Brand washed and dried ready for compounding.
Continental Rubber Co.
120 Broadway New York

COLORS
BRILLIANT ORGANIC DYES; PERMANENT, NON-BLEEDING, LOW COST
For All Cures
The RUBBER SERVICE LABORATORIES CO.
611 Peoples Savings & Trust Bldg.
Akron, Ohio

DIPHENYLGUANIDINE
Aero Brand, product of the highest purity from dependable source of supply.
American Cyanamid Co.
511 Fifth Ave. New York City.

HEELS, soles and strips
We can make any special brand with your molds or with ours. Best quality at the lowest price. Consult us.
P. & B. Rubber Mfg. Co., Inc.
Laurel Hills, Long Island, N. Y.

THE MARKET PLACE Section Continued on Next Page

The Market Place

3.

LINERS — PROCESSED
For
Various Rubber Stocks
The Cleveland Liner & Mfg. Co.
5508 Maurice Ave., Cleveland, O.

MOLDS AND CORES—
Tire building equipment; general machine work.
The Akron Equipment Co.
Akron, Ohio

RECLAIMED RUBBER
We specialize in fine Grey, Black and Red Reclaimed Rubber.
Send us Your Inquiries
The Defiance Rubber Co.
Defiance, Ohio

LUBRICATORS—
Lubricators — Oil Filters — Oiling Systems — Oil Storage — Accessories
Send to Dept. 76 for catalogs.
S. F. Bowser & Co., Inc.
Fort Wayne, Indiana.

MOLDS & CORES—Tire building machines; tire finishing stands; tubing machines; hydraulic presses.
The Akron Standard Mold Co.
Akron, Ohio

RECLAIMED RUBBER—
Uniformity, reliability, cleanliness.
Pequanoc Rubber Co.
Butler, N. J.

MACHINERY—
Heater Presses, Molds and Cores, Tubing Machines.
The Williams Foundry & Mach. Co.
"In Business Since 1888"
Akron, Ohio

MOLDS & CORES
SPECIAL MACHINERY
SWING JOINTS
Specify Bridgwater Service
The Bridgwater Machine Co.
AKRON OHIO

RECLAIMED RUBBER
of Standardized Quality.
NO. 188 FOR TUBES
Philadelphia Rubber Works Co.
New York Akron Philadelphia

MANDRELS--CIRCULAR
and Economy Calender Shells
Prompt Service—Let us quote you.
The Clyde E. Lowe Co.
2976 E. 81st St., Cleveland, Ohio

MOLDS AND CORES —
Also Non-Skid Engraving Machines. Licensees for Watch-case Heaters and India Cores & Chucks.
The Franz Foundry & Machine Co.
Akron, Ohio

RECLAIMED RUBBER—
for all purposes.
Rubber Regenerating Co.
Naugatuck, Conn.

MICA — Water Ground and Water Floated — 160 Mesh —Absolutely Free from Grit. Akron Stocks, also Factory Shipments.
The C. P. Hall Co.
116 Central Savings & Trust Bldg., Akron

MOLDS & CORES— for automobile tires; general machine work.
Kuhlke Machine Co.
Akron, Ohio

RECLAIMED RUBBER
Well Known Standards
Monatiquot Brands
Stedman Products Company
South Braintree, Mass.

MICA—160 mesh—water ground —water floated—free from foreign matter.
Stocks carried at Trenton, N. J.— Cleveland, O.—Chicago, Ill.
The Harshaw Fuller & Goodwin Company
Hanna Building, Cleveland, Ohio

"NU-GUM" RUBBER
Produced from No. 1 Floating Tubes. Absolutely pure — no oils —no compound added. *Specific Gravity*, .98.
E. L. Bullock & Sons, Inc.
99 John St. New York City

RECLAIMED RUBBER
A standardized grade for every requirement.
U. S. Rubber Reclaiming Co., Inc.
100 E. 42nd St., New York, N. Y.
"44 Years Serving the Industry Solely as Reclaimers"

MOLDS
FOR TIRES, MECHANICAL GOODS & DRUGGIST SUNDRIES.
The Akron Rubber Mold & Machine Co.
AKRON, OHIO.

PINE TAR — Retort "Sunny South", "Pentarco", "American". Brands for Tires, Tubes, Mechanicals,—Reclaim. *The Best Softener*
E. W. Colledge, Inc.
P. O. Box 356 Jacksonville, Fla.
Agents in New York, Chicago, Cleveland.

RECLAIMED RUBBER
The Xylos Rubber Co.
Akron, Ohio
CAPACITY 250,000 POUNDS DAILY

THE MARKET PLACE Section Continued on Next Page

The Market Place

RED OXIDE—A special grinding, guaranteed uniform in color and quality.

Joseph A. McNulty
114 Liberty St. New York City

SANITARY GOODS—
Dress Shields, Baby Pants, Aprons, Elastic Belts, Bloomers, Stepins, Bibs, Gumps and Brassieres.
SPECIAL GOODS CUT TO ORDER
Rand Rubber Co., Inc.
Sumner Ave. & Halsey St., Brooklyn, N. Y.

TIRES—For Every Transportation need from the Ford Runabout to the heaviest truck and Multiple passenger coach.

Fisk Rubber Co.
250 West 57th St., N. Y. City

RUBBER— Crude and scrap, all grades.

H. Muehlstein & Co.
Liggett Bldg. New York
Akron, Chicago, Boston, Hoboken

SOLVENTS
DIPPED GOODS NAPHTHAS
RUBBER SOLVENT GASOLINES
Tank Cars of 4, 6 or 8000 gal. capacity
Anderson-Prichard Oil Corp.
Oklahoma City Oklahoma

TIRES
"Goes a long way to make friends"
General Tire & Rubber Co.
Akron, Ohio

RUBBER PRODUCTS
Sanitary Goods, Sheetings, Bathing Caps, Aprons, Rubber Specialties.
Sheet Gum Cut to Pattern
RANDPRINT RUBBER
Rand Rubber Co., Inc.
Sumner Ave. & Halsey St., Brooklyn, N. Y.

STEARIC ACID
STEAREX, the product standardized for rubber compounding.
Binney & Smith Co.
41 East 42nd St., New York City

TUBING, INSULATING and Straining Machinery
"Perfected" equipment for inner tubes, treads, and tire beads. Circular hose looms.
John Royle & Sons
Paterson New Jersey

RUBBER PRODUCTS
Manufacturers of all classes of Rubber Goods.
United States Rubber Co.
1790 Broadway, New York City

STRIP CUTTING MACHINES
For cutting all rubber, composition and plain or impregnated fabrics.
Cameron Machine Co.
61 Poplar St., Brooklyn, N. Y.

USED MACHINERY
Mills, Calenders, Grinders, Washers
New and Old Rubber Scrap
Rubber Cloth Remnants
M. Norton & Co.
Locust St. Medford, Mass.

RUBBER SCRAP
Always Buying and Selling
Rubber Waste, Cured and Uncured, Hard Rubber, Balata, Gutta Percha.
HERMAN WEBER
Newark & Jackson Sts., Hoboken, N. J.

SULPHUR—*"Tire"* Brand Superfine; *"Tube"* Brand Velvet; quality Sulphur for the rubber trade.
Stauffer Chemical Co.,
of Texas
Scanlon Bldg. Houston, Texas
San Francisco, Cal. Chauncey, N. Y.

WHITING & PARIS WHITE
manufactured from *Genuine English Chalk* and *Cliffstone*—no adulterations.
Southwark Mfg. Co.
Camden New Jersey

RUBBER SUBSTITUTES
White, brown and black.
Carter Bell Mfg. Co.
150 Nassau St. New York

TECHNOLOGIST — Testing, formulæ, costs, experimental work on all classes of rubber products. Litigation.
Fred'k. J. Maywald, F.C.S.
5 William St., Belleville, N. J.

WOOD FLOUR (wood pulp)
FINELY POWDERED WHITE PINE WOOD Like Flour—Uniform in Quality
Send for Samples
Becker, Moore & Company, Inc.
MANUFACTURERS
North Tonawanda, New York

SANITARY GOODS —
Dress Shields, Reducing Garments, Sheetings, Aprons, Bathing Caps, etc.
I. B. Kleinert Rubber Co.
485 Fifth Ave., N. Y. City

TESTING MACHINES
U. S. ABRASION TESTER
RUBBER TENSILE TEST MACHINES
Write for Descriptive Literature
Henry L. Scott Co.
P. O. Box 963 Providence, R. I.

ZINC OXIDES — Including KADOX and "Albalith."
The New Jersey Zinc Sales Company
New York Pittsburgh Chicago
Cleveland San Francisco

REVIEW DESK

RUBBER AND ITS USES IN MINING. By Mungo Park and B. J. Eaton. Issued by Federated Malay States Rubber Propaganda Committee, Kuala Lumpur. 1926.

Vulcanized rubber has not generally been employed in the mining industry except for purposes which are common to other industries, such as rubber hose, traveling hand conveyors, rubber boots, masks for miners, and general insulation material. This pamphlet is concerned with new applications of rubber in the mining industry, and particularly with the direct application of the raw material with or without the addition of compounds.

The increasing importance of rubber to mining is only gradually being realized. By virtue of its many special properties, such as resistance to abrasion, lightness, resistance to chemical action, resiliency and toughness, rubber has been found to be of immense service in the mining industry where it is used as lining for certain plant or machinery in which the plant is subject to abrasive action by the material to be treated. The authors consider the adaptation of rubber to the following mining machinery: bearings, belting, conveyors, dredges, flotation impellers, launders, loading chutes, pipe lining, shafting, tube mills, vanners and classifiers.

In the case of pipe linings rubber has been of invaluable service because it has demonstrated unusual powers of resisting abrasion. Mine water is frequently acid and liable to corrode metal pipes; also, it often happens that water charged with grit and sand has to be pumped, or as in the case of placer mining, which is accomplished by means of gravel pumps, water heavily charged with gravel, sands and clays has to be elevated. In all cases it has been found that where pipes have been lined with rubber the life of such pipes has been doubled over those that were unlined.

Of course, this is only one example of what rubber has meant in the way of service and economy to the mining industry. The authors give many other instances where rubber has played an important part in effecting valuable improvements.

A large portion of the pamphlet is devoted to a comprehensive history of the rubber industry and the various known processes of refining crude rubber.

* * *

THE HYDRAULIC PRESS. Published by The Hydraulic Press Manufacturing Co. Vol. 1, No. 2. Columbus, Ohio.

This second issue of *The Hydraulic Press*, which is a house organ for the Hydraulic Press Manufacturing Co., of Columbus, O., contains an explanation of its existence. The editor, Howard F. MacMillin, says: "We are well aware that there are estimable journals that render invaluable service in practically every type of manufacturing. Yet for hydraulics—a power field that includes many industries and thousands of installations—there is no journal in which to record the substantial and notable achievements in hydraulic engineering."

In this number of the *Press* the editor has made good his promise to broadcast, as it were, a wider knowledge of the applications of hydraulics. The publication contains numerous photographs and cuts illustrating hydraulic machinery, together with a number of interesting and well written articles on subjects that should attract the attention of engineers and manufacturers who can adapt hydraulic power to factory processes.

* * *

DOING EXPORT BUSINESS. Published by Foreign Commerce Department of the U. S. Chamber of Commerce, Washington, D. C.

"Doing Export Business" is published by the Foreign Commerce Department of the U. S. Chamber of Commerce as a means of answering the numerous inquiries of its members on this subject. The pamphlet should be valuable to business men who contemplate entering the export field, since it contains much useful information obtained from the experience of American firms that have built up successful trade abroad.

INDEX TO ADVERTISERS

A

Adamson Machine Co. ... 98
Akron Equipment Co. ... 99
Akron Rubber Mold and Machine Co. ... 99
Akron Standard Mold Co., The ... 99
Albert and Son, Inc., L. ... 87
American Cyanamid Co. ... 98
Anderson-Prichard Oil Corp. ... 100
Ault & Wiborg Co. ... 89, 98

B

Banner Machine Co., The ... 98
Barrett Co., The ... 98
Becker, Moore & Co., Inc ... 100
Binney & Smith Co. ... 97, 100, Back Cover
Bishop, C. E. ... 92, 98
Bowser & Co., S. F. ... 56, 99
Bridgwater Machine Co ... 68, 99
Bullock & Sons, Inc., E. L. ... 99

C

Cabot, Inc., Godfrey L. ... 66, 97
Cameron Machine Co. ... 100
Carrier Engineering Corp. ... 98
Carter-Bell Manufacturing Co., The ... 89, 100
Cleveland Liner & Mfg. Co. ... 99
Colledge, E. W., Inc. ... 99
Continental Rubber Co. ... 98

D

Defiance Rubber Co. ... 90, 99
De Mattia Brothers, Inc. ... 68, 98
Dovan Chemical Corp. ... 89, 97
du Pont de Nemours & Co., E. I. ... 55, 97

F

Fisk Rubber Co. ... 100
Franz Foundry & Machine Co. ... 92, 99

G

General Tire & Rubber Co. ... 90, 100
Grasselli Chemical Co. ... 97

H

Hall Co., The C. P. ... 63, 99
Harshaw, Fuller & Goodwin Co. ... 87, 99
Huber, J. M., Inc. ... 70, 97

I

International Pulp Co. ... 73, 97

K

Kleinert Rubber Co., I. B. ... 100
Kuhlke Machine Co. ... 92, 99

L

Lawrence & Co. ... 91, 98
Lowe Co., The Clyde E. ... 67, 99

M

Maywald, Fred'k. J. ... 100
McNulty, Joseph A. ... 100
Moore & Munger ... 57, 97
Muehlstein & Co., Inc., H. ... 98, 100

N

National Aniline & Chemical Co. ... 97
National Standard Co. ... 92-97
Naugatuck Chemical Co. ... 58, 97
New Jersey Zinc Co. ... 100
Norton & Co., M. ... 100

O

Olin Laboratories, The R. R. ... 70, 98

P

P. & B. Rubber Mfg. Co. ... 98
Pequanoc Rubber Co. ... 99
Philadelphia Rubber Works Co. ... 72, 99

R

Rand Rubber Co., Inc. ... 90, 100
Rare Metal Products Co. ... 97
Roessler and Hasslacher Chemical Co., The ... 54, 97
Royle & Sons, John ... 74, 100
Rubber Regenerating Co. ... 99
Rubber Service Laboratories Co., The ... 97, 98

S

Scott Co., Henry L. ... 100
Southwark Mfg. Co. ... 100
Spadone Machine Co. ... 87, 97
Stamford Rubber Supply Co. ... 98
Stauffer Chemical Co. ... 89, 100
Stedman Products Co. ... 99

T

Textile Finishing Machine Co., The ... 89, 97

U

United Clay Mines Corp. ... 89, 98
United Rubber Machinery Exchange ... 87
U. S. Rubber Co. ... 100
U. S. Rubber Reclaiming Co. ... 99, 103

V

Vanderbilt, R. T. Co. ... Front Cover, 98
Vansul, Inc ... 73, 98

W

Weber, Herman ... 100
Whittaker, Clark & Daniels, Inc. ... 89, 98
Williams Foundry & Machine Co., The ... 92, 99
Wilson Co., C. T. ... 90, 98
Wishnick-Tumpeer, Inc. ... 74, 98

X

Xylos Rubber Co. ... 99

The following Papers will be read before the

Institution of the Rubber Industry

"Ageing of Raw & Vulcanized Rubber", G. Martin, B.Sc., A.I.C.
"Set in Vulcanized Rubber", H. Turner, M.Sc., A.I.R.I.Sc.
"Rubber Toys", H. Standring.
"Some Electrical Properties of Rubber", P. Dunsheath, O.B.E., M.A., B.Sc., M.I.E.E., F. Inst. P
"Rubber Pigments from the Point of View of the Manufacturer", C. A. Klein.
"Rubber Statistics", H. Eric Miller.
"Antioxidants & Accelerated Ageing Tests", John M. Bierer
"Rubber Solvents", Dr. D. F. Twiss.
"Proofing", J. Lloyd, A.I.C., A.I.R.I. Tech.
"Difficulties of Rubber Proofed Garment Manufacture", Major N. Blond.
"Production Methods in a Rubber Factory", H. C. Young, M.I. Mech. E., A.M.I.E.E., F.I.R.I.
"A Volatile Oxidation Product of Balata", T. R. Dawson, M.Sc., F.I.C., & B. D. Porritt, M.Sc., F.I.C., F.R.S.E., F.I.R.I.
"The Effect of Magnesium Carbonate on the Transparency of Vulcanized Rubber", Mr. Tanaka, (Japan)
"India Rubber as an Auxiliary to Suspension", Dr. F. W. Lancaster.

And published with the discussions thereon exclusively in "I.R.I. Transactions" (the Official Institution Journal.)

Apply for Specimen Copy from W. F. V. Cox
Institution of the Rubber Industry
Faraday House, 10, Charing Cross Road
LONDON, ENGLAND

In the lead for 40 Years

GUMMI-ZEITUNG

Trade Journal for the RUBBER, GUTTA PERCHA, ASBESTOS, CELLULOID and Allied Industries

Central Organ for the Whole German Rubber Goods Industry

Published Every Friday

SUBSCRIPTION RATES

In United States .....RM 28
Domestic .....RM 20

Sample copy free

WORLD WIDE CIRCULATION

Main Office of GUMMI-ZEITUNG
Berlin SW 19, Krausenstrasse 35/36

Best Advertising Results for all those desiring to make trade connections in Germany in this field.

THE RUBBER AGE

(of London)

THE MONTHLY PUBLICATION
for
ALL BRANCHES OF THE RUBBER INDUSTRY

Circulates among Raw Rubber Producers, Importers, Manufacturers & Dealers.

Published on 1st of each month

Subscription 10/- per annum
Single copies 1/3d post free

OFFICES:—43 ESSEX STREET, STRAND, LONDON, W.C.2.

RED DIAMOND

A Bright Red Reclaimed which holds its original color after cure

TENSILE — 1500 lbs. **STRETCH — 2 to 13 in.**

GRAVITY — 1.20 **RUBBER 60%**

Ideal for Red Inner Tubes

and

for Brown Rubber-Color Auto Tire Frictions
Clean and Smooth
with exceptional tubing and working qualities.

Compounds with RED DIAMOND will age remarkably well

U.S. RUBBER RECLAIMING CO. Inc.

100 East 42 St. N.Y. BUFFALO **Factory-Buffalo, N.Y.**

44 years Serving the Industry— Solely as Rubber Reclaimers

Akron Representative: F. F. Dugan, 617 Second National Bank Building

Warehouses—AKRON, CHICAGO, TRENTON, TORONTO

Which Do You Want Back

?

No. 1
Your Tires

or

No. 2
Your Customers

MICRONEX reduces No. 1 and increases No. 2. Why? Micronex holds up the quality which builds up mileage. Your customers come back and not your tires. Your costs are lowered and your profits increased.

MICRONEX
REG. U.S. PAT. OFF.

"The King of Rubber Pigments"

Binney & Smith Co. 41 East 42nd Street, New York